

Automotive Painter Level 2

Automotive Painter

Unit: B1 Tools and Equipment II

Level: Two

Duration: 7 hours

Theory: 6 Hours

Practical: 1 Hour

Overview:

This unit builds on Tools and Equipment I and is designed to provide the apprentice with a review of the knowledge and skills for using and maintaining tools. Topics include: safely using and maintaining hand tools, using power tools, shop equipment, and refinishing and detailing tools.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Review tools and equipment, and describe their applications.	30%
a. Basic hand tools	
b. Power tools	
• Electric	
• Pneumatic	
• Hydraulic	
c. Shop	
d. Refinishing	
e. Detailing	
2. Review and demonstrate care and maintenance procedures related to tools and equipment.	35%
a. Basic hand tools	
b. Power tools	
• Electric	
• Pneumatic	
• Hydraulic	
c. Shop	
d. Refinishing	
e. Detailing	
3. Review the use of various types of tools and equipment.	35%
a. Basic hand tools	
b. Power tools	
• Electric	
• Pneumatic	
• Hydraulic	
c. Shop	

- d. Refinishing
- e. Detailing

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Unit: B2 Refinishing Equipment Preparation II

Level: Two

Duration: 21 hours

Theory: 7 Hours

Practical: 14 Hours

Overview:

This unit builds on Refinishing Equipment Preparation I and is designed to provide the apprentice with a review of the knowledge and skills for refinishing equipment preparation.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Review terminology associated with refinishing equipment preparation.	5%
2. Review hazards and describe safe work practices when preparing refinishing equipment. <ul style="list-style-type: none">a. Personalb. Shop/facilityc. Equipmentd. Environmental	5%
3. Review and demonstrate the procedures used to set-up, operate and maintain the spray booth. <ul style="list-style-type: none">a. Setup and preparation<ul style="list-style-type: none">• Position air movers• Adjust spray booth temperature and air pressureb. Operatec. Maintenance<ul style="list-style-type: none">• Clean and drain air line system• Inspect and replace air filterd. Shutdown	30%
4. Review and demonstrate the procedures used to set-up, operate and maintain the spray gun. <ul style="list-style-type: none">a. Setup and preparation<ul style="list-style-type: none">• Install recommended fluid tip needle and air cap• Attach cups and hose coupler• Adjust fluid delivery, air pressure, and fan widthb. Operatec. Maintenance<ul style="list-style-type: none">• Identify, troubleshoot and correct spray pattern problems	30%

- Cleaning
- Lubricating

5. Review and demonstrate complete paint booth and spray gun setup and preparation procedures. 30%

- a. Paint booth setup and preparation procedures
- b. Spray gun pattern problem identification and correction
 - Heavy on the top or bottom
 - Heavy in the middle
 - Hourglass
 - Crescent

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Unit: B3 Refinishing Materials II (Prepares)

Level: Two

Duration: 28 hours

Theory: 7 Hours

Practical: 21 Hours

Overview:

This unit builds on Refinishing Materials I and is designed to provide the apprentice with the knowledge and skills for working with refinishing materials, and the skills for applying refinishing materials on automotive panels.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Review terminology associated with refinishing materials.	10%
a. Surface preparation	
b. Application	
2. Review hazards and describe safe work practices when using refinishing materials.	10%
3. Review and demonstrate the types of refinishing materials, their characteristics, applications, and procedures for use.	20%
a. Characteristics	
b. Types	
c. Applications	
d. Additives	
4. Review and demonstrate application of refinishing materials on automotive panels.	20%
5. Perform application of refinishing materials on automotive panels.	40%

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Unit: B4 Refinishing Materials III (Applies)

Level: Two

Duration: 42 hours

Theory: 10 hours

Practical: 32 hours

Overview:

This unit builds on Refinishing Materials II and is designed to provide the apprentice with the knowledge and skills for applying and blending refinishing materials on automotive panels.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Define terminology associated with applying refinishing materials.	10%
2. Identify hazards and describe safe work practices when applying refinishing materials.	10%
3. Describe and demonstrate the types of refinishing materials, characteristics and applications and procedures for use.	25%
a. Characteristics	
• Waterborne	
• Solvent-borne	
b. Types	
• Epoxy-based	
• Polyester	
• Urethane	
• Transparent	
• Tintable	
• Non-tintable	
c. Applications	
• Sealers	
• Top coats (single-stage, two-stage [basecoat/clear coat], multi-stage)	
• Clear coats	
d. Additives	
• Flattening agents	
• Blending agents	
• Accelerators	
• Retarders	
• Flex agents	
• Adhesion promotors	
• Solvents	

- Hardeners

4. **Demonstrate and perform procedures and techniques for applying refinishing materials on automotive panels.** **25%**
 - a. Single-stage finishes
 - b. Two-stage (basecoat/clear coat) finishes
 - c. Multi-stage finishes (including tri-stage and quad-stage)
 - d. Clear coat finishes

5. **Demonstrate and perform procedures and techniques for blending refinishing materials on automotive panels.** **30%**
 - a. Single-stage finishes
 - b. Two-stage (basecoat/clear coat) finishes
 - c. Multi-stage finishes (including tri-stage and quad-stage)
 - d. Clear coat finishes

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Unit: B5 Refinishing Materials IV (Colour Theory and Tinting)

Level: Two

Duration: 49 hours

Theory: 7 hours

Practical: 42 hours

Overview:

This unit builds on Refinishing Materials III and is designed to provide the apprentice with the knowledge and skills for mixing and applying refinishing materials related to colour theory and tinting.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Define terminology associated with mixing and applying refinishing materials.	10%
2. Identify hazards and describe safe work practices when mixing and applying refinishing materials.	5%
3. Describe colour theory and related concepts, and the role of the colour wheel when mixing and applying refinishing materials.	15%
a. Definition of colour	
b. Composition of light	
c. Primary colours	
d. Secondary colours	
e. Colour wheel	
• Value	
• Hue	
• Chroma	
4. Identify and describe variables and application techniques that affect colour matching.	15%
a. Flop	
• Metallic	
• Pearl	
b. Metamerism	
c. Colour vision deficiency	
d. Light sources	
e. Gloss	
f. Agitation of paint	
g. Human error	
h. Spray gun setup/technique	
i. Air pressure	

- j. Solvent type and quantity
 - k. Flash-off times
- 5. Describe and demonstrate procedures used to obtain and adjust colour formulas. 15%**
- a. Paint code
 - b. Colour directory
 - c. Colour variance
 - d. Spray-out cards
 - e. Let-down panels
 - f. Technical support
- 6. Demonstrate and perform procedures and techniques for adjusting colour prior to application on an automotive panel. 20%**
- a. Identify required paint code
 - b. Reference colour directory
 - c. Determine colour variance
 - d. Create spray-out cards
 - e. Create let-down panels
 - f. Contact technical support
- 7. Demonstrate and perform procedures and techniques for mixing, applying and blending refinishing materials on automotive panels. 20%**
- a. Single-stage finishes
 - Spot
 - Panel
 - Complete
 - b. Basecoat/clear coat finishes
 - Spot
 - Panel
 - Complete
 - c. Multi-stage finishes
 - Spot
 - Panel
 - Complete

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Unit: B6 Post-Refinishing Functions II

Level: Two

Duration: 7 hours

Theory: 2 hours

Practical: 5 hours

Overview:

This unit builds on Post-Refinishing Functions I and is designed to provide the apprentice with a review of the knowledge and skills for performing post-refinishing functions and procedures.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Review terminology associated with post-refinishing functions.	5%
2. Review hazards and describe safe work practices when performing post-refinishing functions.	5%
3. Describe and demonstrate the post-refinishing functions for the exterior of the vehicle.	15%
a. Topcoat defects	
b. Surface imperfections	
c. Overspray	
d. Masking	
e. Cleaning (washing)	
4. Review and demonstrate the post-refinishing functions for the interior of the vehicle.	15%
a. Dust	
b. Stains	
c. Glass	
d. Foreign objects (example: gum)	
e. Odour	
f. Techniques for removing	
g. Vacuuming	
5. Review and demonstrate equipment and products used in the post-refinishing of the vehicle.	10%
a. Exterior of the vehicle	
b. Interior of the vehicle	

6. Perform post-refinishing procedures on a vehicle.

50%

- a. Exterior of the vehicle
 - Wash
 - Polish
 - Apply decals, pin stripings and emblems
- b. Interior of the vehicle
 - Clean
 - Vacuuming

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Unit: B7 Electrical Fundamentals

Level: Two

Duration: 7 hours

Theory: 6 hours

Practical: 1 hours

Overview:

This unit is designed to provide the apprentice with an overview of electrical fundamentals. Topics will include: basic electrical theory, trade related terminology, safety precautions, electrical and electronic components and component operation, electrical and electronic circuits, testing electrical and electronic components, electrical schematics/diagrams and interpreting electrical schematics/diagrams in repair.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Define terminology associated with electrical fundamentals.	10%
a. Basic electrical theory	
b. Basic electrical components	
c. Basic electronic components	
d. Basic electrical and electronic component operation	
2. Identify hazards and describe safe work practices when working with electrical and electronic components.	5%
3. Describe and interpret basic electrical wiring diagrams and their use.	15%
4. Describe and demonstrate the use of instruments used to test basic electrical and electronic circuits and components and their procedures for use.	20%
a. Test light	
b. Multi-meter	
5. Apply Ohm's law to calculate values in a basic electrical circuit.	10%
6. Demonstrate and perform the procedures used to test and repair basic electrical and electronic circuits and their components.	20%
a. Test tools	
• Test light	
• Multi-meter	
b. Repair techniques	
• Splicing	
• Soldering	

7. **Demonstrate and perform the procedures used to interpret basic electrical wiring diagrams when repairing electrical and electronic systems and their components.** 20%
- a. Repair techniques
 - Splicing
 - Soldering
 - b. Other materials used when repairing electrical and electronic systems
 - Shrink tube
 - Butt-splice connectors

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Unit: B8 Journeyperson Trainer

Level: Two

Duration: 7 hours

Theory: 7 hours

Practical: 0 hours

Overview:

Level 1 in-school technical training offers an entry-level orientation to the challenges of apprenticeship training as it relates to the development of core tasks and skill requirements, as well as social competencies. This unit introduces senior apprentices to the responsibilities of workplace training that they will assume as supervising journeypersons. Most trades have a rich tradition of refreshing and sharing their trade skills from one generation of trade practitioner to the next. This unit orients senior apprentices to some of the practical and conceptual tools that can enable them to contribute to this trade heritage when they become certified journeypersons and, ultimately, journeyperson trainers.

The journeyperson's obligation to assist entry-level apprentices to develop skills and knowledge is complex and challenging. It involves safety considerations, employer expectations, provincial regulations, as well as the tradition of skills stewardship that links modern practice with the long history of workplace teaching and learning that defines the apprenticeable trades. The ability to offer timely and appropriate support to apprentices is itself an important area of trade learning. This unit presents material intended to help refine this ability through reflection and discussion by senior apprentices, and discussion with their in-school instructor and journeyperson trainer.

This content reflects Manitoba and Canadian standards prescribed for journeyperson-level supervisory capabilities, as well as key topics in current research on the importance of workplace training in apprenticeship systems. These detailed descriptors represent suggested focal points or guidelines for potentially worthwhile exploration, and are neither mandatory nor exhaustive.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Compare/contrast role-options and responsibilities of the supervising journeyperson.	50%
a. Implicit vs. explicit standards and content: training goals are/are not codified; assessment measures are/are not used	
b. Accountability for results: e.g. journeyperson is/is not required to prepare performance evaluation that could affect apprentice's employability or wage-rate, etc.	
c. Long-term vs. short-term supervision assignments – e.g., considerable latitude/little latitude for apprentice to learn from mistakes	
d. Formally vs. informally structured – e.g. supervision assignment is part of a prescribed cycle of assignments involving coordination among multiple journeypersons; apprentice is trained according to an individual training plan negotiated with employer	
e. Types of supervisory role options and what is implied by each:	
• Journeyperson Trainer (JT) role: often initiated by someone other than apprentice, and limited to a particular skill set, task, or production requirement	
• Mentor role: often initiated by apprentice, and relatively open-ended regarding content, duration, etc.	

- Peer role: typically involves individual upgrading or cross-training of one journeyperson by another; can include senior apprentice assisting less-experienced trade learner
- Coordinator role: often a senior-level journeyperson appointed by an organization to assume responsibilities for monitoring progression of groups of apprentices
- Other roles: may be improvised by journeyperson, such as combination or multiple roles of the above

2. Describe and demonstrate common requirements about providing journeyperson level supervision. 50%

- Apprenticeship learning adapted to journeyperson supervision assignments and a journeyperson perspective
 - Application of adult education concepts to trades teaching and learning (e.g. responsibilities and expectations of senior-level apprentices)
 - Practical significance of 'styles' of adult learning and teaching
 - Helping senior-level apprentices integrate in-school technical training and on-the-job practical training experiences
 - Providing help and guidance about new tasks and skills
 - Providing help and guidance about fixing mistakes
 - Learning and teaching "the ropes" – socialization of apprentice within a community of trade practice (e.g. how to borrow a tool, interrupt a journeyperson, and seek advice of experienced co-workers)
 - Coverage and documentation of prescribed tasks and subtasks where applicable.
 - Discuss the limits of the journeyperson trainers' own responsibilities and competence (e.g. scope, willingness to train, etc.)
 - Benefits of maintaining a personal record of achievements, ideas, and needs as a journeyperson trainer (e.g. resume, portfolio, training credentials, logbook, etc.)
- Individual reflection and guided group discussion about personal experiences of workplace learning as an apprentice
 - Identification of best and worst practices of journeyperson trainer
 - Identification of workplace and other factors that can contribute to good and bad trades teaching/learning experiences
 - Development of professional standards and work ethics about responsibility to share one's knowledge and skill with others in the workplace (e.g., use/misuse of humour, rigour, discretion, craft-pride, etc.)
 - Qualities of a good journeyperson trainer
 - Components of workplace journeyperson training
 - Processes and recommended practices re: journeyperson training
 - Troubleshooting problems re: supervision assignments
- Role of assessment in supervising, coaching, or guiding other people to learn or improve their skills (e.g. formative and summative evaluation), and how this might contribute to how the journeyperson-level supervision task is approached in future
- Compare and contrast discussion results with current knowledge and resources about workplace training methods as they apply to journeyperson-level supervision assignments
- Other (as may be specified by instructor)

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Unit: B9 Pre-Interprovincial Review

Level: Two

Duration: 7 hours

Theory: 7 hours

Practical: 0 hours

Overview:

This unit offers senior apprentices a systematic review of skills and knowledge required to pass the Inter-Provincial Examination. It promotes a purposeful personal synthesis between on-the-job learning and the content of in-school technical training. The unit includes information about the significance of Interprovincial (Red Seal) certification and the features of the Interprovincial Examination. **Note: No percentage-weightings for test purposes are prescribed for this unit's objectives. Instead, a 'Pass/Fail' grade will be recorded for the unit in its entirety.**

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
<p>1. Describe the significance, format and general content of Inter-Provincial (IP) Examinations for the trade of Automotive Painter.</p> <ul style="list-style-type: none"> a. Scope and aims of Interprovincial (Red Seal) certification; value of certifications b. Obligations of candidates for Interprovincial certification <ul style="list-style-type: none"> • Relevance of Interprovincial Examinations to current, accepted trade practices; industry-based provincial and national validation of test items • Supplemental Policy (retesting) • Confidentiality of examination content c. Multiple-choice format (four-option) item format, Red Seal standards for acceptable test items d. Government materials relevant to the Interprovincial Examinations for apprentice Automotive Painter technicians <ul style="list-style-type: none"> • Red Seal Occupational Standard (RSOS) – for Automotive Refinishing Technician; prescribed scope of the skills and knowledge which comprise the trade • RSOS “Pie-chart” and its relationship to content distribution of Interprovincial Examination items • Apprenticeship Manitoba Technical Training package. 	n/a
<p>2. Identify resources, strategies and other considerations for maximizing successful completion of written examinations.</p> <ul style="list-style-type: none"> a. Personal preparedness <ul style="list-style-type: none"> • Rest • Nutrition • Personal study regimen • Prior experience in test situations (e.g., Unit Tests) c. Self-assessment, consultation and personal study plan 	n/a

- Self-assessment of individual strengths/weaknesses in trade related skills and knowledge
- Approved textbooks
- Study groups

3. **Review program content regarding the major work activity of performs common occupational skills.** n/a
4. **Review program content regarding the major work activity of performs preparation.** n/a
5. **Review program content regarding the major work activity of performs refinishing procedures.** n/a
