

# Automotive Painter Level 2

## Automotive Painter

**Unit:** D3 Electrical Fundamentals

**Level:** Two

**Duration:** 10 hours

Theory: 7 hours

Practical: 3 hours

### Overview:

This unit is designed to provide the motor vehicle body repair 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.

<b>Objectives and Content:</b>	<b><u>Percent of Unit Mark (%)</u></b>
1. Describe the basic electrical theory and demonstrate correct repair procedures such as splicing/repairing, soldering and use of shrink tube.	25%
2. Define and describe trade related terminology associated with basic electrical and electronic components, and their operation.	11%
3. Identify and describe safety precautions relating to electrical and electronic components.	7%
4. Describe and demonstrate the use of instruments used to test electrical and electronic circuits and components and their procedures for use, including test lights and multi-meters.	23%
5. Describe and interpret basic electrical schematics/diagrams (OEM) and their use in the trade.	7%
6. Describe the procedures used to interpret electrical schematics/diagrams in the repair of electrical systems and electronic components. a. Original equipment manufacturer (OEM) recommendations	4%
7. Describe the procedures used to test electrical and electronic circuits and components.	14%
8. Use Ohm's law to calculate values in a parallel series circuit.	9%

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## Automotive Painter

**Unit:** H5 Primers, Surfacers, Sealers

**Level:** Two

**Duration:** 49 hours

Theory: 8 hours

Practical: 41 hours

### Overview:

This unit is designed to provide the motor vehicle body repair apprentice with an overview of primers, surfacers, and sealers (prepping of substrates). Topics will include: describing types of primers, surfacers, and sealers (prepping substrates), safety considerations, equipment in applying primers, surfacers and sealers (prepping substrates), setting-up, adjusting, caring for, and maintaining equipment, preparing substrates, mixing procedures for primers, surfacers, and sealers (prepping substrates), application techniques, defects, ceases and prevention, and preparing for topcoats.

<b>Objectives and Content:</b>	<b><u>Percent of Unit Mark (%)</u></b>
<p>1. <b>Define and describe terminology and classifications for primers, surfacers and sealers, and describe their characteristics and applications.</b></p> <p>a. Safety considerations and requirements (personal, shop/facility, environment)</p> <p>b. Types</p> <p>c. Characteristics</p> <p>d. Application techniques and procedures</p> <p>e. Defects, causes and procedures to prevent and correct</p>	<b>25%</b>
<p>2. <b>Describe the procedures used to set-up, adjust, care for and maintain equipment used in applying primers, surfacers and sealers (refinishing materials).</b></p>	<b>17%</b>
<p>3. <b>Describe the procedures used to set-up, adjust and maintain equipment for refinishing equipment, spray booths, make-up units, baking equipment and blowers for waterborne</b></p>	<b>9%</b>
<p>4. <b>Demonstrate the procedures used to prepare substrates prior to applying undercoats and topcoats.</b></p>	<b>12%</b>
<p>5. <b>Describe the procedures used to prepare substrate prior to applying primers, surfacers and sealers.</b></p>	<b>10%</b>
<p>6. <b>Describe the procedures for mixing primers, surfacers and sealers.</b></p>	<b>7%</b>
<p>7. <b>Describe the procedures used to prepare primers, surfacers and sealers for topcoat.</b></p>	<b>7%</b>

- 8. **Demonstrate the procedures for mixing undercoats, and preventing and correcting undercoat defects.** 6%
- 9. **Demonstrate undercoat application techniques and procedures.** 7%

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## Automotive Painter

**Unit:** H6 Refinishing II

**Level:** Two

**Duration:** 58 hours

Theory: 8 hours

Practical: 50 hours

### Overview:

This unit is designed to provide the motor vehicle body repair apprentice with an overview of refinishing. Topics will include: surface final preparation, application of refinishing equipment, setting-up, operating, adjusting, caring for, and maintaining refinishing equipment and types of multi-stage and basecoat finishes.

<b>Objectives and Content:</b>	<b><u>Percent of Unit Mark (%)</u></b>
1. <b>Describe safety considerations relating to refinishing.</b> a. Personal b. Shop/facility c. environment	<b>4%</b>
2. <b>Describe the final surface preparation procedures for refinishing.</b>	<b>17%</b>
3. <b>Identify refinishing equipment and its applications.</b>	<b>27%</b>
4. <b>Describe the procedures used to set-up, operate, adjust, care for and maintain refinishing equipment.</b>	<b>10%</b>
5. <b>Identify and describe multi-stage finishes.</b> a. Multi-stage finishes (OEM processes for application of topcoats) • Temperature/humidity effects • Air movement equipment b. Other types of finishes (single-stage finishes, basecoats/clearcoats)	<b>12%</b>
6. <b>Prepare surface for refinishing and blending.</b>	<b>10%</b>
7. <b>Set-up, operate, adjust, and maintain refinishing equipment.</b>	<b>10%</b>
8. <b>Demonstrate and apply multi-stage finishes.</b> a. Multi-stage finishes (OEM processes for application of topcoats) • Temperature/humidity effects • Air movement equipment b. Other types of finishes (single-stage finishes, basecoats/clearcoats)	<b>10%</b>

## Automotive Painter

**Unit:** H7 Refinishing III

**Level:** Two

**Duration:** 40 hours

Theory: 10 hours

Practical: 30 hours

### Overview:

This unit is designed to provide the motor vehicle body repair apprentice with an overview of refinishing. Topics will include: describing colour theory and colour matching, mixing and applying single and multi-stage finishes, refinishing plastic parts, blending top coats and identifying defects and preventing and correcting topcoat defects.

<b>Objectives and Content:</b>	<b><u>Percent of Unit Mark (%)</u></b>
<b>1. Describe the procedures for colour theory and colour matching/adjustment.</b>	<b>38%</b>
<b>2. Describe the procedures for mixing and applying single-stage and multi-stage finishes.</b> a. Spot b. Panel c. Complete	<b>11%</b>
<b>3. Describe the procedures used to refinish plastic parts.</b> a. Interior b. Exterior	<b>4%</b>
<b>4. Describe the procedures used to blend top coats.</b> a. Single stage b. Base coat c. Multi-stage d. Clearcoat	<b>10%</b>
<b>5. Identify topcoat defects that occur during application and describe the procedures used to prevent and correct them.</b>	<b>7%</b>
<b>6. Demonstrate the procedures for colour matching and various blending techniques.</b> a. Colour matching b. Various blending techniques	<b>40%</b>

- 7. Demonstrate the procedures for mixing and applying topcoats. 20%**
- a. Describe and perform adjustments by weight or parts-volume
    - Calculations and procedures for colour adjustments.
  - b. Mixing and applying single stage finishes
  - c. Mixing and applying basecoat, clearcoat, and tri-coats
  - d. Refinishing plastic parts
- 8. Demonstrate procedure for correcting and preventing topcoat defects. 10%**

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## Automotive Painter

**Unit:** A6 Orientation II: The Job of Journeywork

**Level:** Two

**Duration:** 14 hours

Theory: 10 hours

Practical: 4 hours

### Overview:

Automotive Painter Technical Training offers an entry-level orientation to the challenges of apprenticeship learning. The present unit introduces senior apprentices to the responsibilities of workplace *teaching* that they will assume as supervising journeypersons. Tradeworkers have a particularly rich tradition of refreshing and sharing their skills from one generation of practitioners 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 themselves become certified journeypersons. The journeyperson's obligation to assist trade learners 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, 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 dialogue with their instructor. The detailed descriptors under each unit objective reflect Manitoba and Canadian standards prescribed for journey-level supervisory capabilities, as well as key topics in current research on the importance of workplace teaching and learning in trades-apprenticeship systems. Thus, descriptors represent suggested focal points or guidelines for potentially-worthwhile exploration. Delivery of this content will vary with the discretion of individual instructors, and with the experiences senior apprentices bring forward for group/individual reflection on the skills-stewardship dimension of their own future practice as journeypersons.

### Objectives and Content:

### Percent of Unit Mark (%)

- |  |            |
|--|------------|
| <b>1. Describe the scope, substance, and significance of journey-level status.</b>   | <b>10%</b> |
| a. Historical background, including trainee experiences  |            |
| <ul style="list-style-type: none"><li>• Origin, definition, and examples of journey-level status</li><li>• Obligations to employers, trade clients, and apprentices</li><li>• Concept of skills stewardship, and its rationale</li><li>• Customary responsibilities of journeyperson as workplace trainer/supervisor</li><li>• Overview development of formal systems for regulating/recognizing journey-level competence in designated apprenticeable trades</li><li>• Contributions of 'unticketed journeymen' and other informally-qualified Ironworkers to workplace trade-learning</li><li>• Achievements/limitations of informal systems for workplace training</li><li>• Trends (e.g. succession planning in the trades; recognition of credentials and prior learning; defined standards for on-the-job trades education and training)</li></ul> |            |
| b. Regulatory/legal dimensions of journey-level status in designated trades  |            |
| <ul style="list-style-type: none"><li>• Rights and obligations re: Canada's Interprovincial 'Red Seal' program (Red</li></ul>  |            |



- Seal rationale, scope, and products, including the National Occupational Analysis [NOA], and Interprovincial examinations
- Manitoba provincial requirements [e.g. *Apprenticeship and Trades Qualifications Act; General Regulation; the Automotive Painter Trade Regulation*; relevant policies of the Apprenticeship and Trades Qualifications Board of Manitoba]
- Trade-specific requirements re: Practical Training supervision and documentation; importance of quality assurance and broad-scope coverage of prescribed task-content; ratios, etc.
- c. Other (as may be specified by instructor)

**2. Compare/contrast role-options and responsibilities of the supervising journeyperson.**

**20%**

- a. Recognizing the variability of supervision assignments, situations, and roles
- b. Source and specification of the supervision assignment
- c. Formal vs. informal roles (e.g. mandated by an employer's succession plan)
- d. Implicit vs. explicit standards and content: training goals are/are not codified; assessment measures are/are not used,
- e. Accountability for results: subject/not subject to third-party notification; completion of supervision assignment itself is/is not assessed by third party; journeyperson is/is not required to prepare performance evaluation that could affect apprentice's employability or wage-rate, etc.
- f. General vs. task- or job-specific supervision assignments: e.g. scope of expectations re: content of supervisory task(s)
- g. Long-term vs. short-run supervision assignments – e.g., considerable latitude/little latitude for apprentice to learn from mistakes
- h. 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
- i. Typology of common supervisory role-options and what is implied by each:
  - Coach role: is 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
  - Managerial role(s): can shade over into hire/fire issues as lead-hand or site-boss
  - 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
- j. Possibilities, perils, and likelihood of role-overlap in 'real-life' trade practice
- k. Importance of clarifying all roles, expectations, and implications involved in accepting a supervision assignment
- l. Role of Apprenticeship Training Coordinator (ATC), Manitoba Apprenticeship Branch
- m. Resources for developing skills and knowledge re: providing journey-level supervision
  - Books and journals (not always trade-specific)
  - Websites
  - Conversation with trade instructors, journeypersons, and peers
  - Workshops
- n. Other (as may be specified by instructor)

**3. Describe/demonstrate common requirements re: providing journey-level supervision. 20%**

- a. Review Unit A1 content re: challenges/opportunities of Apprenticeship learning adapted to journey-level supervision assignments and a journey-level standpoint
  - Application of adult education concepts to trades teaching/learning (e.g. responsibilities and expectations of adult learners)
  - Practical significance of ‘styles’ of adult learning and teaching
  - Helping apprentices to integrate Technical Training (in school) and Practical Training (on-the-job) learning experiences
  - Providing help and guidance re: new tasks and skills
  - Providing help and guidance re: fixing mistakes
  - Learning/teaching “the ropes” – socialization of learner within a community of trade practice (e.g. how to borrow a tool, interrupt a journeyperson, ‘recruit’ an advisor )
  - Coverage/documentation of prescribed tasks and subtasks (Landscape Horticulturist NOA), including responsibility re: logbook sign-off (where applicable)
  - Consultation with Apprenticeship Training Coordinator (ATC), Manitoba Apprenticeship Branch
  - Communicating with apprentices and employers about supervision assignments and assignment specifications, including the limits of the trainers’ own responsibilities and competence (e.g. substance-abuse intervention)
  - Benefits of maintaining a personal record of achievements, ideas, and needs as a workplace trainer
- b. Individual reflection and guided group discussion re: personal experiences of workplace learning as an apprentice
  - Identification of best and worst practices of supervising journeypersons
  - Assessment of personal experiences (if any) to date in supervising, coaching, or guiding other people to learn or improve their skills (e.g. entry-level apprentices, members of athletic team, younger family members, etc.), and how this might compare/contrast with the journey-level support of apprenticeship learning
  - Identification of workplace and other factors that can contribute to good and bad trades teaching/learning experiences
  - Development of personal standards re: responsibility to share one’s knowledge and skill with others in the workplace (e.g., use/misuse of humour, rigour, discretion, craft-pride, etc.)
- c. Comparison/contrast of discussion results with current knowledge/resources re: workplace skills coaching methods as applicable to journey-level supervision assignments
  - Qualities of a good workplace coach
  - Components of workplace skills coaching
  - Processes and recommended practices re: workplace coaching
  - Troubleshooting problems re: supervision assignments
- d. Other (as may be specified by instructor)

**4. Complete Modules 1 to 3, *Workplace Coaching Skills* (or equivalent). 25%**

- a. Identifying purpose of the lesson
  - Explaining the point of the lesson
  - Role of the coach in specific coaching situation
  - Other (specified by instructor)
- b. Linking the lesson
  - Learner needs
  - Lesson sequence
  - Focus on learner
  - Selection/timing of coaching opportunities
- c. Demonstration of skill/task to be learned

- Starting the coaching session
- Demonstration
- Hands-on trial
- Recap for learner

**5. Complete Modules 4 to 6, *Workplace Coaching Skills* (or equivalent).**

**25%**

- a. Practice of skill/task to be learned
  - Nature and importance of practice
  - Setting up for learner practice
  - Types of practice
  - Recycling and reinforcing skill/task learning
- b. Providing feedback to the learner
  - Value of feedback
  - Kinds of feedback
  - Guidelines and tips
- c. Assessment
  - Value of assessing learner progress
  - Assessing level of skill
  - Planning further steps toward skill/task mastery

## Automotive Painter

**Unit:** A7 Pre-IP Review

**Level:** Two

**Duration:** 4 hours

Theory: 4 hours

Practical: 0 hours

### Overview:

This unit offers senior Automotive Painter 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 Provincial certification and the features of the Provincial 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.**

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

- knowledge
- Approved textbooks
- Study groups

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|---|------------|
| <b>3. Review program content regarding occupational skills.</b> | <b>n/a</b> |
| <b>4. Review program content regarding vehicle preparation.</b> | <b>n/a</b> |
| <b>5. Review program content regarding refinishing.</b>         | <b>n/a</b> |
| <b>6. Review program content regarding pre-delivery.</b>        | <b>n/a</b> |

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