Lather/Interior Systems Mechanic (ISM)
Level 4
# Lather/Interior Systems Mechanic (ISM)

**Unit:**     A5 Pre-Certification Review  
**Level:**     Four  
**Duration:**  45 hours  
Theory: 20 hours  
Practical: 25 hours  

**Overview:**

This unit offers senior apprentices a systematic review of skills and knowledge required to pass the Interprovincial 'Red Seal' 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 Red Seal Interprovincial certification and the features of the Interprovincial exam. As well, the apprentice will experience a practical application of building an in shop project clarification.

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.

<table>
<thead>
<tr>
<th>Percent of Objectives and Content: Unit Mark (%)</th>
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</thead>
<tbody>
<tr>
<td>1. Describe the significance, format and general content of Interprovincial (Red Seal) Examinations for the trade of lather (Interior Systems Mechanic).</td>
<td>n/a</td>
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<tr>
<td>a. Scope and aims of Red Seal system; value of certifications</td>
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<tr>
<td>b. Obligations of candidates for IP certification</td>
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<tr>
<td>• Relevance of IP Examinations to current, accepted trade practices; industry-based national validation of test items</td>
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<td>• Supplemental Policy (retesting)</td>
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<td>• Confidentiality of examination content</td>
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<tr>
<td>c. Multiple-choice format (four-option) item format, Red Seal/Apprenticeship Branch standards for acceptable test items</td>
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<tr>
<td>d. Government materials relevant to the IP Examinations for apprentice Lather/ISMs</td>
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<tr>
<td>• National Occupational Analysis (NOA); prescribed cope of the skills and</td>
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<tr>
<td>• NOA &quot;Pie-chart&quot; and its relationship to content distribution of IP</td>
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<td>• Manitoba Apprentice Portfolio, especially the NOA-based Practical</td>
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<td>2. Identify resources, strategies and other considerations for maximizing successful completion of written exams.</td>
<td>n/a</td>
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<tr>
<td>a. Personal preparedness</td>
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<td>• Rest</td>
<td></td>
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<td>• Nutrition</td>
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<td>• Personal study regimen</td>
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<td>• Prior experience in test situations (e.g., Unit Tests)</td>
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<tr>
<td>b. Self-assessment, consultation and personal study plan</td>
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<tr>
<td>• Self-assessment of individual strengths/weaknesses in trade related skills and knowledge</td>
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<tr>
<td>• Approved textbooks</td>
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<td>• Study groups</td>
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</table>
3. Review program content regarding occupational skills. n/a
4. Review program content regarding framing. n/a
5. Review program content regarding interior systems. n/a
6. Review program content regarding exterior systems. n/a
7. Review program content regarding practical project. n/a

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Unit: B4 Blueprint Reading and Specifications 4

Level: Four

Duration: 49 hours

Theory: 5 hours
Practical: 44 hours

Overview:

This unit is designed to provide the apprentice with the knowledge and skills of blueprint reading and specifications. Topics will include: reviewing blueprint reading and specifications, special fire and sound controls and their construction, wall and ceiling designs, and recognizing typical and unusual job demands by referring to blueprints, drawings and specifications.

Objectives and Content:

1. Review blueprint reading and specifications. 35%

2. Discuss special fire- and sound-controls and their construction. 18%
   a. National Research Council
   b. Decibels
   c. Sound transmission class
   d. Flame spread
   e. Heat transmission
   f. Smoke controls

3. Discuss wall and ceiling designs in regards to special fire and sound controls 17%
   a. Non-combustible materials
   b. Treatment of wall cavities
   c. Sound bars and barriers
   d. Sealants

4. Refer to blueprints, drawings and specifications for typical and unusual job demands, the co-ordination of work loads with other trades and various other concerns arising. 30%

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Unit: D4 Framing Exterior Walls and Panels

Level: Four

Duration: 41 hours
  Theory: 15 hours
  Practical: 26 hours

Overview:
This unit is designed to provide the apprentice with the knowledge and skills for frame exterior walls and panels. Topics will include: types of manufactured panels, manufactured panel construction techniques, types of pre-manufactured panels and pre-manufactured panel installation techniques.

Objectives and Content:

1. Discuss the types of manufactured panels. 17%
2. Describe manufactured panel construction techniques. 18%
   a. Layout of framing
   b. Securing framing
   c. Placing and installing substrate
   d. Placing and securing exterior finish
3. Discuss the types of pre-manufactured panels. 17%
4. Practice calculating trade related problems on ratios and proportions. 18%
   a. Attaching hardware
   b. Securing panels to crane
   c. Hand signals to crane operator
   d. Placing and attaching pre-manufactured panels
5. Construct framing for exterior walls and panels. 30%

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Unit: D6 Framing Roofs

Level: Four
Duration: 50 hours
  Theory: 25 hours
  Practical: 25 hours

Overview:
This unit is designed to provide the apprentice with the knowledge and skills to frame roofs. Topics include: steel studs, load-bearing limits, building code requirements, roof erection techniques, and structural steel stud framing details.

Objectives and Content:

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<th>Percent of Unit Mark (%)</th>
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<td>14%</td>
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<tr>
<td>30%</td>
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</table>

1. Discuss the types of steel studs.
2. Describe general load-bearing limits.
3. Review building-code requirements specific to roofs.
4. Describe roofs
   a. Types
   b. Materials
   c. Characteristics
   d. Properties
5. Describe roof-erection techniques.
   a. Cut and install track
   b. Studs
   c. Roof components
   d. Specified anchors and fasteners
6. Discuss structural steel and framing details.
7. Construct a load-bearing steel-stud roof and apply framing details.
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Unit: F3 Lead Shielding

Level: Four

Duration: 15 hours
  Theory: 5 hours
  Practical: 10 hours

Overview:
This unit is designed to provide the apprentice with the knowledge and skills to install lead shielding. Topics will include: purpose of lead shielding, lead installation techniques, lead baffles, radiation shielding, and radiation protective systems.

Objectives and Content:

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<th>Percent of Unit Mark (%)</th>
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<tbody>
<tr>
<td>1. Discuss the purpose of lead shielding.</td>
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<td>a. Types</td>
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<td>b. Thickness</td>
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<td>c. X-ray purpose</td>
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<td>d. Sound purpose</td>
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<td>2. Describe lead-installation techniques.</td>
<td>21%</td>
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<td>a. Lead-handling precautions</td>
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<td>b. Measuring</td>
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<td>c. Cutting</td>
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<td>d. Sealing X-ray conductive perforations in lead panels</td>
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<td>3. Discuss lead baffles.</td>
<td>21%</td>
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<td>a. Layout</td>
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<td>b. Installation</td>
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<td>4. Explain radiation shielding.</td>
<td>11%</td>
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<td>a. Units of radiation</td>
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<td>b. Perspective of risk</td>
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<td>c. Personnel monitoring</td>
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<td>d. Measure to minimize radiation exposure</td>
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<td>5. Discuss radiation protective systems.</td>
<td>7%</td>
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<td></td>
<td>a. Lead protective-shielding</td>
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<td></td>
<td>• Framing and furring members</td>
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<td>• Fasteners</td>
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<td>• Adhesives</td>
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<td>• Accessories</td>
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<td>b. Framing and installation</td>
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<td>• Layout</td>
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</tbody>
</table>
• Corner details
• Wall intersections
• Base intersections

c. Testing (to ensure lead protective shielding provides full radiation protection for specified project)

6. Install lead shielding. 30%
   a. Safety
   b. Tools and materials
   c. Components
      • Studs
      • Shielding
      • Finish materials
      • Door frames
      • Window frames
   d. Layout and framing
      • Basic walls
      • Corner details
      • Wall and ceiling intersections
      • Door placement and windows
   e. Lead-application installation
      • Walls, outlets, openings, doors
      • Fastener shielding
      • Interior finishes
   f. Inspection/testing

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Unit: G4 Rain Screen Systems

Level: Four
Duration: 24 hours
  Theory: 12 hours
  Practical: 12 hours

Overview:
This unit is designed to provide the apprentice with the knowledge and skills to install rain screen systems. Topics will include: purpose and principles of rain screen systems, installation techniques of rain screen systems and installation techniques of furring.

Objectives and Content:

Percent of Unit Mark (%)

1. Describe the purpose and principles of rain screen systems. 28%
2. Discuss the installation techniques of rain screen systems. 28%
3. Discuss the installation techniques of furring. 14%
4. Demonstrate application techniques of rain screen systems. 30%
   a. Cut flashing
   b. Install flashing
   c. Cut furring strips
   d. Install furring strips
   e. Install membrane material
   f. Install rain screen systems

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Unit: G7 Exterior Insulation Finish System (EIFS) - Advanced

Level: Four
Duration: 24 hours
   Theory: 12 hours
   Practical: 12 hours

Overview:
This is designed to provide the apprentice with the knowledge and skills to install an exterior insulation finish system. Topics will include: specialty tools and equipment, back-wrap procedures and techniques use, embedment of reinforcing mesh to insulation board, application of finish coat, and on-site fabrication and installing panelization systems.

Objectives and Content:  

1. Review specialty tools and equipment used for the EIFS system. 17%
2. Review back wrap procedures and techniques used. 17%
3. Discuss the application of finish coat. 18%
   a. Thickness
   b. Types of trims and finishes
   c. Colours available
4. Explain the lamination of insulation board to sheathing and the adhesives used. 18%
   a. Thickness
   b. Types of trims and finishes
   c. Colours available
5. Develop an on-site fabrication and install panelization systems 30%
   a. Components
      • steel studs
      • track
      • exterior sheathing
      • insulation board
      • fibreglass mesh
      • surface finish
   b. Installation
      • Layout
      • Exterior sheathing and fastening
      • Reinforcing mesh to insulation board
   c. Finish coat

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