

Lather (Interior Systems Mechanic) Level 3

Lather (Interior Systems Mechanic)

Unit: C1 Blueprints and Specifications III

Level: Three

Duration: 28 hours

Theory: 7 hours

Practical: 21 hours

Overview:

This unit, which builds on *A4 – Blueprints and Specifications I* and *B1 – Blueprints and Specifications II*, is designed to provide the apprentice with additional knowledge and skills about blueprints and specifications. The unit begins with coverage of tendering/bidding practices and work drawing preparation. Part of the unit covers studying sets of specifications, adjusting small-scale plan views to large-scale details, and drawing pictorial drawings. Finally, the unit covers estimating material takeoff and the use of blueprints, drawings, and specifications.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Review unit <i>B1 – Blueprints and Specifications II</i>.	10%
a. Reading and interpreting commercial plans	
b. Amplifying drawings with notes	
c. Isolating trade-related work from blueprints	
d. Drawing freehand pictorial sketches for clarifications of details, notes, etc.	
e. Drawing blueprints for shop projects	
2. Describe tendering and bidding practices.	5%
3. Prepare working drawings.	10%
a. Working drawings for special features	
• Domed or groined ceilings	
• Ceilings that incorporate recesses, troughs, steps, etc.	
b. Detailed drawings for shop projects	
4. Study a set of specifications.	20%
a. Scope	
b. Determine ambiguous or arbitrary sections	
5. Adjust small-scale plan views to large-scale details.	10%
6. Draw pictorial drawings in freehand clarification.	10%
7. Estimate material takeoff.	15%

8. Refer to blueprints, engineered shop drawings and specifications.

20%

- a. Typical and unusual demands
- b. Coordination of workloads with other trades

Lather (Interior Systems Mechanic)

Unit: C2 Trade Related Mathematics III

Level: Three

Duration: 35 hours

Theory: 21 hours

Practical: 14 hours

Overview:

This unit, which builds on **A5 – Trade Related Mathematics I** and **B2 – Trade Related Mathematics II**, is designed to provide the apprentice with additional knowledge and skills about trade related math. The unit begins with coverage of perimeter, area and material lists from a blueprint. Part of the unit covers making calculations from specifications or plans, mechanical advantage and rules, and developing graphs and bar charts. Finally, the unit covers estimating with unit costs and calculating trade related problems on ratio and proportion.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Review unit B2 – Trade Related Mathematics II.	10%
a. Calculating trade related problems	
b. Calculating layout patterns, materials, types and quantities	
c. Calculating layout and material quantities for circular and elliptical projects	
2. Describe and calculate perimeter, area and material lists from a blueprint.	10%
a. Irregular layouts	
b. Curved layouts	
3. Make calculations from specifications or plans.	10%
4. Describe mechanical advantage and rules.	10%
5. Develop graph and bar charts that correlate job scheduling and timesheets.	10%
6. Estimate with unit costs.	25%
7. Calculate trade related problems on ratio and proportion.	25%
a. Roof framing	
b. Slope	
• Rise	
• Run	

Lather (Interior Systems Mechanic)

Unit: C3 Load-Bearing Steel Assemblies II

Level: Three

Duration: 42 hours

Theory: 21 hours

Practical: 21 hours

Overview:

This unit, which builds on **B4 – Load-Bearing Steel Assemblies I**, is designed to provide the apprentice with additional knowledge and skills about load-bearing steel assemblies. The unit begins with framing of exterior ceilings, soffits and load-bearing walls. Part of the unit covers load-bearing bulkheads. Finally, the unit covers load-bearing floors and roofs.

Objectives and Content:

Percent of Unit Mark (%)

- | | |
|--|------------|
| 1. Describe framing of load-bearing walls. | 10% |
| a. Types of load-bearing walls, their characteristics and applications | |
| b. Types of load-bearing wall components, their characteristics and applications | |
| c. Interpreting information from drawings and specifications | |
| d. Tools and equipment | |
| e. Framing procedures | |
| f. Types of fasteners | |
| g. Types of substrates and their properties | |
| h. Basic welding and plasma cutting procedures | |
| 2. Describe framing of exterior ceilings and soffits. | 10% |
| a. Types of exterior ceilings and soffits, their characteristics and applications | |
| b. Types of exterior ceiling and soffit components, their characteristics and applications | |
| c. Interpreting information from drawings and specifications | |
| d. Tools and equipment | |
| e. Framing procedures | |
| f. Types of fasteners | |
| g. Types of substrates and their properties | |
| 3. Describe framing of load-bearing bulkheads. | 10% |
| a. Types of load-bearing bulkheads, their characteristics and applications | |
| b. Types of load-bearing bulkhead components, their characteristics and applications | |
| c. Functions | |
| d. Interpreting information from drawings and specifications | |
| e. Tools and equipment | |
| f. Framing procedures | |
| g. Types of fasteners | |
| h. Types of substrates and their properties | |

- i. Structural requirements
 - j. Bulkhead component spacing requirements
 - k. Basic welding and plasma cutting procedures
- 4. Describe framing of load-bearing floors. 10%**
- a. Types of load-bearing floors, their characteristics and applications
 - b. Types of load-bearing floor components, their characteristics and applications
 - c. Interpreting information from drawings and specifications
 - d. Tools and equipment
 - e. Framing procedures
 - f. Types of fasteners
 - g. Types of substrates and their properties
 - h. Basic welding and plasma cutting procedures
- 5. Describe framing of load-bearing roofs. 10%**
- a. Types of load-bearing roofs, their characteristics, applications and functions
 - b. Types of load-bearing roof components, their characteristics, applications and functions
 - c. Interpreting information from drawings and specifications
 - d. Tools and equipment
 - e. Framing procedures
 - f. Types of fasteners
 - g. Types of substrates and their properties
 - h. Basic welding and plasma cutting procedures
- 6. Perform framing of load-bearing walls. 15%**
- 7. Perform framing of load-bearing floors. 15%**
- 8. Perform framing of load-bearing roofs. 20%**

Lather (Interior Systems Mechanic)

Unit: C4 Wall Systems and Components III

Level: Three

Duration: 42 hours

Theory: 21 hours

Practical: 21 hours

Overview:

This unit, which builds on **A8 – Wall Systems and Components I** and **B5 – Wall Systems and Components II**, is designed to provide the apprentice with additional knowledge and skills about wall systems and components, sound barriers and lead radiation shielding. The unit begins with coverage of installation of sound barriers. Part of the unit covers installation of lead radiation shielding. Finally, the unit covers installation of demountable walls.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Review unit B5 – Wall Systems and Components II.	20%
a. Types of sound barriers	
b. Installation of sound barriers	
2. Describe installation of lead radiation shielding.	20%
a. Types of lead radiation shielding and their applications	
b. Characteristics	
• Weight	
• Thickness	
c. Purpose	
• Sound proofing	
• Radiation protection	
d. Lead handling precautions	
e. Locations for installation	
• Hospitals	
• Dental offices	
• Laboratories	
f. Inspection procedures	
g. Tools and equipment	
h. Installation procedures	
3. Describe installation of demountable walls.	20%
a. Types of demountable walls, their characteristics and applications	
• Gravity lock	
• Side clip	
• Batten systems	

- b. Types of demountable wall components, their characteristics and applications
 - Baseboards
 - J trims
 - Corner pieces
 - Top tracks
 - Battens
- c. Types of drywall
 - Vinyl-covered
 - Cloth-covered
 - Veneer-covered
- d. Framing systems
- e. Sizes of pre-finished drywall
- f. Tools and equipment
- g. Installation procedures
- h. Types of fastening systems
- i. Fasteners

4. Perform installation of demountable walls.

40%

Lather (Interior Systems Mechanic)

Unit: C5 Ceiling Systems II

Level: Three

Duration: 28 hours

Theory: 7 hours

Practical: 21 hours

Overview:

This unit, which builds on **B6 – Ceiling Systems I**, is designed to provide the apprentice with additional knowledge and skills about ceiling systems. The unit covers installation of suspended and non-suspended ceilings.

Objectives and Content:	Percent of Unit Mark (%)
1. Describe installation of suspended ceilings.	40%
a. Types of suspended ceilings, their characteristics and applications	
b. Types of suspended ceiling components, their characteristics and applications	
c. Types of grid systems, their characteristics and applications	
d. Types of T-bar systems, their characteristics and applications	
e. Tools and equipment	
f. Installation procedures	
g. Methods of installing hangers	
h. Requirements for utility fixtures	
i. Codes, standards and regulations	
2. Perform installation of suspended ceilings.	50%
3. Describe installation of non-suspended ceilings.	10%
a. Types of non-suspended ceilings, their characteristics and applications	
b. Tools and equipment	
c. Installation procedures	
d. Types of adhesives and fasteners	

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Unit: C6 Access Flooring Systems

Level: Three

Duration: 14 hours

Theory: 7 hours

Practical: 7 hours

Overview:

This unit is designed to provide the apprentice with knowledge and skills about access flooring systems. The unit covers installation of pedestals, supporting hardware and installation of floor panels.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Describe installation of pedestals and supporting hardware.	25%
a. Types of access flooring systems, their characteristics and applications <ul style="list-style-type: none">• Rigid grid• Free-standing• Snap lock	
b. Types of pedestals, their characteristics and applications <ul style="list-style-type: none">• Grid• Gridless	
c. Types of supporting hardware for pedestals, their characteristics and applications <ul style="list-style-type: none">• Stringers• Screws• Wall moulding	
d. Tools and equipment	
e. Installation procedures	
f. Layout methods	
2. Perform installation of pedestals and supporting hardware.	25%
3. Describe installation of floor panels.	25%
a. Types of floor panels, their characteristics and applications	
b. Tools and equipment	
c. Installation procedures	
4. Perform installation of floor panels.	25%

Lather (Interior Systems Mechanic)

Unit: C7 Smoke and Fire Barriers II

Level: Three

Duration: 21 hours

Theory: 14 hours

Practical: 7 hours

Overview:

This unit, which builds on **B7 – Smoke and Fire Barriers II**, is designed to provide the apprentice with additional knowledge and skills about smoke and fire barriers. The unit begins with coverage of shaft wall systems. Part of the unit covers sealing penetrations. Finally, the unit covers beam, column and staircase enclosures.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Describe installation of shaft wall systems.	20%
a. Types of shaft wall systems, their characteristics and applications	
b. Types of shaft wall system components, their characteristics and applications	
c. Tools and equipment	
d. Installation procedures	
e. Sequence of shaft wall construction	
f. Types of fasteners	
g. Codes, standards and regulations	
2. Describe sealing of penetrations.	10%
a. Types of penetrations, their characteristics and applications	
b. Tools and equipment	
c. Procedures to seal penetrations	
d. Materials to seal penetrations	
e. Clearances required for expansion	
f. Codes, standards and regulations	
3. Describe beam, column and staircase enclosures.	35%
a. Tools and equipment	
b. Procedures to enclose	
c. Materials used to enclose	
d. Components	
e. Types of fasteners used to install framing and drywall	
f. Sequence of assembly	
g. Codes, standards and regulations	

4. Perform assembly of enclosures.

35%

- a. Beams
- b. Columns
- c. Staircases

Lather (Interior Systems Mechanic)

Unit: C8 Exterior Systems

Level: Three

Duration: 28 hours

Theory: 14 hours

Practical: 14 hours

Overview:

This unit is designed to provide the apprentice with knowledge and skills about exterior systems. The unit begins with coverage of interior/exterior membranes. Part of the unit covers exterior sheathing, lath and Exterior Insulation Finish Systems (EIFS). Finally, the unit covers panels, including pre-manufactured panels.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Describe installation of interior/exterior membranes.	20%
a. Types of interior/exterior membranes, their characteristics and applications <ul style="list-style-type: none">• Polyethylene film vapour barrier• Rubberized non-permeable membrane• Aluminum foil• Building wrap	
b. Tools and equipment	
c. Installation procedures	
d. Types of sealants	
2. Describe installation of exterior sheathing.	10%
a. Types of exterior sheathing, their characteristics and applications <ul style="list-style-type: none">• Glass mat covered gypsum panels• Exterior gypsum panels• Cement board panels• Plywood	
b. Tools and equipment	
c. Installation procedures	
d. Types of fasteners	
e. Types of sealants	
3. Describe installation of lath.	10%
a. Types of lath, their characteristics and applications <ul style="list-style-type: none">• Expanded metal• Rib and welded stucco wire	
b. Expansion joints, plaster stops and flashings	
c. Tools and equipment	
d. Installation procedures	

- e. Fastener spacing requirements
 - f. Types of fasteners
- 4. Perform installation of lath. 20%**
- 5. Describe installation of Exterior Insulation Finish Systems (EIFS). 5%**
- a. Types of EIFS, their characteristics and applications
 - Rainscreen
 - Pressure equalization systems
 - b. Expansion joints and flashings
 - c. Tools and equipment
 - d. Installation procedures
 - e. Fastener spacing requirements
 - f. Types of fasteners
- 6. Describe fabrication of panels. 10%**
- a. Types of panels, their characteristics and applications
 - Curtain wall
 - Rainscreen
 - General cosmetic
 - b. Tools and equipment
 - c. Fabrication procedures
 - d. Fabrication materials
 - Steel studs
 - Tracks
 - Sheathing
 - Bridging clips
 - Channels
 - e. Types of fasteners
 - f. Types of substrates
- 7. Perform fabrication of panels. 15%**
- 8. Describe installation of pre-manufactured panels. 10%**
- a. Types of pre-manufactured panels, their characteristics and applications
 - Wind-load
 - Axial load
 - b. Tools and equipment
 - c. Installation procedures
 - d. Types of fasteners
 - e. Types of substrates
 - f. Joint tolerances
 - g. Importance of installing braces after installation

Lather (Interior Systems Mechanic)

Unit: C9 Journeyperson Trainer

Level: Three

Duration: 7 hours

Theory: 7 hours

Practical: 0 hours

Overview:

Level One 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.

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. Compare/contrast role options and responsibilities of the supervising journeyperson.</p> <ul style="list-style-type: none"> 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 	n/a

- e. Types of supervisory role options and what is implied by each:
 - Journeyman 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 journeyman by another; can include senior apprentice assisting less-experienced trade learner
 - Coordinator role: often a senior-level journeyman appointed by an organization to assume responsibilities for monitoring progression of groups of apprentices
 - Other roles: may be improvised by journeyman, such as a combination of multiple roles of the above

2. Describe and demonstrate common requirements about providing journeyman-level supervision. n/a

- a. Apprenticeship learning adapted to journeyman supervision assignments and a journeyman 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 journeyman, seek advice of experienced co-workers)
 - Coverage and documentation of prescribed tasks and subtasks where applicable
 - Discuss the limits of the journeyman 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 journeyman trainer (e.g., resume, portfolio, training credentials, logbook, etc.)
- b. Individual reflection and guided group discussion about personal experiences of workplace learning as an apprentice
 - Identification of best and worst practices of a journeyman 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 journeyman trainer
 - Components of workplace journeyman training
 - Processes and recommended practices re: journeyman training
 - Troubleshooting problems re: supervision assignments
- c. 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 journeyman-level supervision task is approached in future
- d. Compare and contrast discussion results with current knowledge and resources about workplace training methods as they apply to journeyman-level supervision assignments
- e. Other (as may be specified by instructor)

Lather (Interior Systems Mechanic)

Unit: C10 Pre-Interprovincial Exam Review

Level: Three

Duration: 35 hours

Theory: 35 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 Provincial certification and the features of the Inter-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.

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 Lather (Interior Systems Mechanic).</p> <ul style="list-style-type: none"> a. Scope and aims of Inter-Provincial certification; value of certifications b. Obligations of candidates for Inter-Provincial certification <ul style="list-style-type: none"> • Relevance of Inter-Provincial 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 (four-option) item format, Red Seal standards for acceptable test items d. Government materials relevant to the Inter-Provincial Examinations for lather apprentices <ul style="list-style-type: none"> • Red Seal Occupational Standard (RSOS); prescribed scope of the skills and knowledge which comprise the trade • RSOS "Pie-chart" and its relationship to content distribution of Inter-Provincial 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) 	n/a

- b. Self-assessment, consultation and personal study plan
 - 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 framing activities.** n/a

- 5. **Review program content regarding the major work activity of installs interior systems.** n/a

- 6. **Review program content regarding the major work activity of installs exterior systems.** n/a
