

Carpenter Level 4

Carpenter

Unit: A4.2 Quantity Surveying

Level: Four

Duration: 35 Hours

Theory: 35 Hours

Practical: 0 Hours

Overview:

This unit of instruction is designed to provide the theoretical grounding required to derive accurate estimates from construction drawings.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Take-off quantities from architectural drawings and compile spreadsheet(s).	45%
a. Architectural woodwork	
b. Doors	
c. Fasteners/sealants	
d. Fixtures	
e. Framing materials	
f. Hardware	
g. Insulation	
2. Take-off quantities from structural drawings.	30%
a. Anchor bolts	
b. Concrete	
c. Formwork	
e. Rebar	
3. Describe general and specific procedures to protect structures during renovation projects.	15%
a. Architectural specialties	
b. Excavations	
c. Landscape lumber	
d. Paving blocks	
e. Sidewalks	
4. Take-off quantities from electrical, mechanical, and trade drawings.	10%
a. Anchor bolts	
b. Concrete	
c. Excavation	
d. Miscellaneous inserts	

Carpenter

Unit: A7.5 Renovation-Specific Carpentry Practices

Level: Four

Duration: 35 Hours

Theory: 35 Hours

Practical: 0 Hours

Overview:

Targeted to senior apprentices, this unit applies instructor-specified aspects of Carpenter trade-learning to the particular challenges of commercial/residential renovation projects. Both the technical requirements as well as the workplace social environment of the renovation market require special training. For one thing, built structures/components under renovation typically are of many different ages and varieties and must be tied in with new construction utilizing modern-day materials and techniques. Similarly, renovation carpenters typically work in the very middle of clients' lives and living-spaces, and this too requires special skill. The unit is presented from a case-study perspective, inviting senior apprentices to refine their practical problem-solving, communication, and technical skills by direct application to instructor-provided renovation scenarios and project documents.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Describe the scope, significance, and special requirements of renovation-specific carpentry practice.	15%
a. Analyzing/diagnosing existing conditions (residential and commercial projects), including assessment of special hazards/precautions, access requirements, and communication requirements	
b. Designing renovation projects and project work-plans (including use of special technical resources such as old building codes/practices (e.g., balloon framing), documentation/regulation of heritage structures, etc.)	
c. Communicating with clients and other tradeworkers	
d. Other (specified by instructor)	
2. Describe general and specific procedures to remove material(s) per typical renovation-project requirements.	20%
a. Hazards/precautions associated with particular organisms, materials, and products (e.g., moulds, vermin, lead, asbestos, polychlorinated biphenyls [PCBs], obsolete/hazardous materials, etc.)	
b. Use of technical drawings, codes, and regulatory documents (e.g., Fire Code provisions, fire ratings, Heritage/Historic resource structures, etc.)	
c. Procedure for removal specific materials/structures while ensuring integrity and stability of original structure/components, including:	
• Removal of wooden materials (joists, studs, lintels, etc.)	
• Removal of concrete components (grade beams, footings, etc.)	
• Removal of exterior components (doors, windows, walls, (shingles, siding, flashing, etc.)	
d. Other (specified by instructor)	

- 3. Describe general and specific procedures to protect structures during renovation projects. 15%**
- a. Special hazards and precautions associated with protection of structures during renovation
 - b. Construction, use, and securement of temporary supports/beams, including:
 - Standards re: selection, provision, and placement of supports and beams
 - Relating the supported load and the base of the support post to the support location (and vice versa)
 - Construction and securement of temporary beams per Code and safety requirements
 - c. Protection/shielding of building components and finished surfaces during renovation, including:
 - To protect finished surfaces from debris, traffic and contact with temporary supports
 - Use of tarps and hoardings to cover access to living areas and exposed structures
 - Application of protective covers against strong sunlight and other potentially-damaging atmospheric conditions
 - d. Other (specified by instructor)
- 4. Describe general and specific procedures for joining new construction to old (e.g., tie-ins) per renovation-specific project requirements, including: 25%**
- a. Application and significance of fire-separations and fire ratings
 - b. Preferred practices re: establishing transitions and tie-ins per renovation-project requirements, including:
 - Maintaining continuous building-envelope when joining new door/window units to existing vapour/air barriers
 - Selecting suitable fasteners for new concrete walls/floors
 - Selecting/installing new materials via methods that prevent damage to adjacent structure/components.
 - Structurally/aesthetically appropriate blending of new and old materials (e.g., siding, concrete/tile flooring, etc.)
 - Mechanical/chemical bonding new and old materials such as thinset mortar stucco, concrete, etc.
 - Weatherproofing transition between new and old construction via installation of exterior sheathing, flashing, etc.
 - c. Other (specified by instructor)
- 5. Describe/demonstrate renovation carpentry procedures to change existing structures and building components per instructor specifications, including: 25%**
- a. Modification of original rough-opening (RO) dimensions to retrofit for modern doors, windows, stairway components, etc.
 - b. Anticipating the impact(s) of moving/removing/altering/adjusting an existing structural component such as a beam , lintel, joist, telepost, wood posts, bearing wall, stairway, etc.
 - c. Building new structures to compensate for structural changes mandated by reno-project design criteria
 - d. Upgrading of wall-cavities, insulation, and other wall-structure components to improve energy-efficiency
 - e. Relocating stairs and shelving
 - f. Building new structures required to accommodate renovation design criteria
 - e. Other (specified by instructor)

Carpenter

Unit: B1.3 Stair Forms

Level: Four

Duration: 4 Hours

Theory: 4 Hours

Practical: 0 Hours

Overview:

This unit of instruction is designed to provide the theoretical grounding required to describe the construction and installation of stair forms.

Objectives and Content:

Unit Mark (%)

- | | |
|---|------------|
| 1. Take-off quantities from architectural drawings and compile spreadsheet(s). | 25% |
| a. Architectural woodwork | |
| b. Doors | |
| c. Fasteners/sealants | |
| d. Fixtures | |
| e. Framing materials | |
| 2. Take-off quantities from structural drawings. | 75% |
| a. Braces | |
| b. Dismantling | |
| c. Inverted stringer | |
| d. Layout | |
| e. Multiple-use (re-use, etc.) | |
| f. Risers | |
| g. Soffit | |
| h. Strongback | |
| i. Support | |
| j. Ties | |

Carpenter

Unit: B1.4 Forms for Pre-Cast Concrete

Level: Four

Duration: 5 Hours

Theory: 5 Hours

Practical: 0 Hours

Overview:

This unit of instruction is designed to provide the theoretical grounding required to describe the construction and installation of forms for precast-concrete components.

Objectives and Content:

Unit Mark (%)

- | | |
|--|------------|
| 1. Describe formwork for precast-concrete components. | 50% |
| a. Cast-in-place (lift/slab) | |
| b. Hollow core | |
| c. Insulated/non-insulated | |
| d. Pre-/post-tensioned | |
| e. Pre-stressed | |
| f. Stairs | |
| g. Tilt-up | |
| h. Vault | |
|
 | |
| 2. Describe major considerations when forming for precast concrete. | 50% |
| a. Alignment | |
| b. Architectural finish | |
| c. Blockouts | |
| d. Disassembly | |
| e. Layout | |
| f. Lifting systems | |
| g. Reconditioning | |
| h. Ties | |

Carpenter

Unit: B1.5 Suspended-Slab and Beam Forms

Level: Four

Duration: 7 Hours

Theory: 7 Hours

Practical: 0 Hours

Overview:

This unit of instruction is designed to provide the theoretical grounding required to describe formwork for beams and suspended slabs.

Objectives and Content:

Unit Mark (%)

- | | |
|---|------------|
| 1. Describe the various types of suspended slabs. | 10% |
| a. Beam-and-girder | |
| b. Coffered | |
| c. Flat Plate | |
| d. Flat slab | |
| e. One-way joist | |
| f. Pre-stressed | |
| g. Void slabs | |
| 2. Describe the types of beams and capitals. | 5% |
| a. Beam | |
| b. Capital | |
| c. Drop panel | |
| e. Joist | |
| f. Slab band | |
| 3. Describe falsework for suspended slabs and beams. | 10% |
| a. Adjustable steel shores | |
| b. Composite construction | |
| c. Ellis shores | |
| d. Horizontal/diagonal components | |
| e. Metal-frame shoring | |
| f. T-posts | |
| 4. Describe form-systems and materials. | 10% |
| a. Composite | |
| b. Fibreglass pans | |
| c. Fly forms | |
| d. Steel pans | |
| e. Stick frame (loose-frame) | |

- f. Void forms
- 5. Describe the sequence of concrete-form construction for suspended slabs, beams, and capitals. 20%**
- a. Blockouts
 - b. Bracing
 - c. Bulkheads
 - d. Decking
 - e. Inserts
 - f. Joints
 - g. Shoring
 - h. Sills
 - i. Ties
- 6. Describe the procedures for dismantling forms and removing supports. 20%**
- a. Backshoring
 - b. Form removal
 - c. Pan removal
 - d. Permanent/temporary shores
 - e. Reconditioning
 - f. Reshoring
- 7. Describe the effects of concrete placement on support systems. 10%**
- a. Bucket concrete
 - b. Gas-buggy delivery
 - c. Pumped concrete
 - d. Sequencing (avoidance of eccentric uploading and uplift)
- 8. Describe procedure for applying reinforcement materials. 10%**
- a. Connection methods
 - b. Grade and size
 - c. Location and supports
 - d. Main bars and ties
- 9. Describe procedure for installing anchor-bolts, templates, and miscellaneous inserts. 5%**
- a. Elevation
 - b. Location

Carpenter

Unit: B2.3 Practicum: Suspended Slab, etc.

Level: Four

Duration: 16 Hours

Theory: 0 Hours

Practical: 16 Hours

Overview:

This unit of instruction is designed to provide practical experience in the installation of suspended slab, etc.

Objective:

Unit Mark (%)

1. A practical project at the discretion of the instructor.

100%

Carpenter

Unit: B2.4 Practicum: Stair Forms

Level: Four

Duration: 14 Hours

Theory: 0 Hours

Practical: 14 Hours

Overview:

This unit of instruction is designed to provide practical experience in the construction and installation of stair forms.

Objectives and Content:

Unit Mark (%)

1. Lay out stairs.

25%

- a. Effective depth
- b. Landing
- c. Rise/run
- d. Soffit

2. Build and place forms.

70%

- a. Chamfer-strips
- b. Dismantle formwork and falsework
- c. Install anchors, templates, and miscellaneous inserts
- d. Inverted stringer
- e. Reinforcement
- f. Riser form
- g. Shoring
- h. Side form
- i. Soffit form
- j. Strongback

Carpenter

Unit: E1.1 Flooring

Level: Four

Duration: 4 Hours

Theory: 4 Hours

Practical: 0 Hours

Overview:

This unit of instruction is designed to provide theoretical grounding required to identify types of flooring and describe their installation.

Objectives and Content:

Unit Mark (%)

- | | |
|---|------------|
| 1. Identify types of flooring. | 20% |
| a. Milling techniques | |
| • Edge-grain | |
| • Flat-sawn | |
| • Plain-sawn | |
| • Quarter-sawn | |
| • Sizes | |
| • Square-edge | |
| • Tongue-and-groove (T-and-G) | |
| b. Resilient (rolled resilient; vinyl composite; tile) | |
| c. Species/grade of wood | |
| d. Wooden (laminated; parquet; plank; prefinished; strip) | |
| 2. Identify types of specialty flooring. | 5% |
| a. Access | |
| b. Bowling alley | |
| c. Floating floor | |
| e. Gymnasium | |
| 3. Identify types of flooring accessories. | 10% |
| a. Adhesives | |
| b. Fasteners | |
| c. Sleepers | |
| d. Sealants/finishes | |
| e. Vinyl base | |
| 4. Describe procedure for installing flooring-systems. | 35% |
| a. Adhesives | |
| b. Climatizing | |
| c. Fasteners | |

- d. Layout
- e. Sanding/finishing
- f. Storage/handling

5. Explain advantages/disadvantages of various fasteners and adhesives. 20%

- a. Finishes/sealers
- b. Latex-based adhesives
- c. Nails
- e. Solvent-based adhesives
- f. Toxicity levels

6. Calculate flooring materials. 10%

- a. Area
- b. Balancing
- c. Linear measure
- d. Percentage waste
- e. Quantity

Carpenter

Unit: E1.2 Wall Coverings

Level: Four

Duration: 6 Hours

Theory: 6 Hours

Practical: 0 Hours

Overview:

This unit of instruction is designed to provide theoretical grounding required to identify/describe the installation of interior wall coverings and accessorize.

Objectives and Content:

Unit Mark (%)

1. Identify types of gypsum wallboard.

5%

- a. Cementitious
- b. Edge profiles
- c. Fire-rated
- d. Foil-back
- e. Lead-lined
- f. Moisture-resistant
- g. Plaster lath
- h. Pre-decorated
- i. Size

2. Describe procedure for installing gypsum wallboard.

5%

- a. Acoustical application
- b. Adhesives
- c. Air-tight drywall approach
- d. Bending drywall-sheets
- e. Causes of nail-popping
- f. Fasteners
- g. Floating corners
- h. Furring
- i. Horizontal/vertical application
- j. National Building Code requirements
- k. Openings
- l. Pre-decorated application
- m. Single/laminated application

3. Identify gypsum-wallboard accessories.

10%

- a. Access panels
- b. Acoustical sealants
- c. Control joints

- d. Corner bead
 - e. Fasteners
 - f. Gaskets
 - g. Grounds
 - h. Metal mesh
 - i. Mouldings
 - j. Resilient channel
- 4. Describe procedure for taping and joint-filling. 10%**
- a. Filling technique
 - b. Finishing technique
 - c. Joint compound
 - d. Sanding
 - e. Types of tape
- 5. Identify types of non-gypsum interior wall coverings. 20%**
- a. Acoustic paneling
 - b. Composition board
 - c. Corkboard
 - d. Laminates
 - e. Lumber
 - f. Paneling
 - g. Plywood
 - h. Tile
- 6. Describe the installation of non-gypsum interior wall coverings. 20%**
- a. Adhesives
 - b. Balancing
 - c. Corners
 - d. Cuttings/fittings
 - e. Fasteners
 - f. Joints/grout
 - g. Layout
 - h. Matching
 - i. National Building Code requirements
 - j. Scribing
 - k. Wainscoting
- 7. Identify accessories for non-gypsum interior wall coverings. 10%**
- a. Adhesives
 - b. Fasteners
 - c. Mouldings
- 8. Describe the use of accessories for non-gypsum interior wall coverings. 10%**
- a. Adhesives
 - b. Fasteners
 - c. Mouldings
- 9. Calculate interior wall covering materials 10%**
- a. Area
 - b. Balancing
 - c. Linear measure

- d. Percentage waste
- e. Quality

Carpenter

Unit: E1.3 Ceilings

Level: Four

Duration: 6 Hours

Theory: 6 Hours

Practical: 0 Hours

Overview:

This unit of instruction is designed to provide theoretical grounding required to identify/describe interior ceilings and ceiling-systems.

Objectives and Content:

Unit Mark (%)

- | | |
|---|------------|
| 1. Identify types of suspended ceilings. | 5% |
| a. Braces | |
| b. Dismantling | |
| c. Inverted stringer | |
| d. Layout | |
| e. Multiple-use (re-use, etc.) | |
| f. Risers | |
| g. Soffit | |
| 2. Identify suspended-ceiling system components. | 10% |
| a. Braces | |
| b. Dismantling | |
| c. Inverted stringer | |
| d. Layout | |
| e. Multiple-use (re-use, etc.) | |
| f. Risers | |
| g. Soffit | |
| h. Strongback | |
| i. Support | |
| j. Ties | |
| 3. Describe procedure for installing suspended ceilings. | 10% |
| a. Anchors/fasteners | |
| b. Channels | |
| c. Cross-tees/splines | |
| d. Hold-down clips | |
| e. Main-tees | |
| f. Suspension wire | |
| g. Tiles | |
| h. Wall-moulding | |

- i. Wire-ties
- 4. Identify types of non-suspended ceilings. 5%**
- a. Composition ceiling-tile
 - b. Gypsum board
 - c. Solid wood/paneling
- 5. Identify components of non-suspended ceilings. 15%**
- a. Adhesives
 - b. Battens
 - c. Fasteners
 - d. Furring
 - e. Gypsum board
 - f. Lumber
 - g. Moulding
 - h. Panels
 - i. Tiles
- 6. Describe procedure for installing non-suspended ceilings. 15%**
- a. Balancing
 - b. Climatizing
 - c. Cutting
 - d. Elevation
 - e. Fasteners
 - f. Fire-rated
 - g. Fitting
 - h. Furring
 - i. Layout
 - j. Leveling
 - k. National Building Code requirements
 - l. Pattern
 - m. Shimming
 - n. Storage/handling
 - o. Strapping
- 7. Describe function of dropped ceilings and bulkheads. 10%**
- a. Architectural features
 - b. Cabinet projections
 - c. Concealment of structural components
 - d. Concealment of mechanical and electrical fixtures
 - e. Fire protection
- 8. Describe construction methods associated with dropped-ceiling systems. 20%**
- a. Adhesives
 - b. Coverings
 - c. Elevations
 - d. Fasteners
 - e. Finishes
 - f. Framing details
 - g. Layout
- 9. Calculate ceiling materials. 10%**

- a. Area
- b. Balancing
- c. Linear measure
- d. Percentage waste
- e. Quantity

Carpenter

Unit: E1.8 Interior Finish

Level: Four

Duration: 4 Hours

Theory: 4 Hours

Practical: 0 Hours

Overview:

This unit of instruction is designed to provide the theoretical grounding required to derive accurate estimates from construction drawings.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Describe cross-sectional profiles of commonly-used architectural interior mouldings.	20%
a. Apron	
b. Baseboard	
c. Batten	
d. Bed	
e. Carpet strip	
f. Casing	
g. Chair rail	
h. Composite moulding	
i. Crown	
j. Drywall moulding	
k. Half-round	
l. Picture rail	
m. Plastic moulding	
n. Plate rail	
o. Quarter-round	
p. Scotia/cove	
q. Solid	
r. Sprun	
s. Stool	
2. Describe the uses of architectural interior mouldings	20%
a. Joint coverings and treatment	
b. Ornamentation	
3. Describe the joinery and installation methods associated with hanging architectural interior trim.	50%
a. Butted	

- b. Coped
- c. Fasteners
- d. Finger-jointed
- e. Lapped
- f. Mitre (compound; conventional; returned)
- g. Scarfed
- h. Scribed

- 4. Take-off quantities from electrical, mechanical, and trade drawings. 10%**
- a. Balancing
 - b. Linear measure
 - c. Percentage waste
 - d. Quantity

Carpenter

Unit: E2.1 Practicum: Flooring

Level: Four

Duration: 5 Hours

Theory: 0 Hours

Practical: 5 Hours

Overview:

This unit of instruction is designed to provide practical experience in the installation of flooring.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Prepare subfloor. a. Moisture barrier b. Sand surfaces c. Subfloor inspection	15%
2. Install sleepers. a. Air/vapour barriers b. Fasteners c. Shims	10%
3. Lay-out reference-points/guidelines. a. Balancing borders b. Direction of run c. Patterns/squaring d. Starting point	15%
4. Select and install wooden flooring. a. Adhesives b. Climatizing c. Cutting d. Expansion e. Fastening f. Laminated flooring g. Parquet flooring h. Prefinished i. Racking j. Scribing k. Strip flooring	20%
5. Select and install underlayment.	20%

- a. Adhesives
- b. Breaking joints
- c. Composition board
- d. Door openings
- e. Expansion
- f. Fasteners
- g. Flush points
- h. Gypsum board
- i. Layout
- j. Plywood
- k. Starting point

6. Install vinyl and rubber baseboard.

20%

- a. Adhesives
- b. Internal/external corners
- c. Seamless base

Carpenter

Unit: E2.2 Practicum: Wall Coverings

Level: Four

Duration: 7 Hours

Theory: 0 Hours

Practical: 7 Hours

Overview:

This unit of instruction is designed to provide practical experience in the installation of interior wall coverings and accessories.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Prepare wall surfaces.	30%
a. Backing	
b. Protrusions	
c. Straightness	
d. Vapour barrier	
2. Install gypsum wallboard and accessories.	30%
a. Access panels	
b. Acoustic sealants	
c. Control-joints	
d. Corner-bead	
e. Cutting methods	
f. Fasteners	
g. Gaskets	
h. Grounds	
i. Layout	
j. Metal mesh	
k. Moulding	
l. National Building Code requirements	
m. Resilient channel	
3. Install non-gypsum wallcoverings and accessories	40%
a. Adhesives	
b. Balancing	
c. Climatization	
d. Coping	
e. Storage/handling	
f. Surface preparation	

Carpenter

Unit: E2.3 Practicum: Ceilings

Level: Four

Duration: 6 Hours

Theory: 0 Hours

Practical: 6 Hours

Overview:

This unit of instruction is designed to provide practical experience in the installation of ceilings and ceiling-systems.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Install suspended ceilings.	30%
a. Anchoring components	
b. Balancing	
c. Centre lines	
d. Elevation	
e. Fasteners	
f. Grid	
g. Hangers	
h. Layout	
i. Leveling	
j. Patterns	
k. Reference lines	
2. Install non-suspended ceilings.	30%
a. Adhesives	
b. Balancing	
c. Elevation	
d. Fasteners	
e. Furring/strapping	
f. Layout	
g. Moulding	
h. Pattern	
i. Shims	
j. T-shore	
3. Install dropped ceilings and bulkheads.	40%
a. Elevations	
b. Fireproofing	
c. Framing	

- d. Furring/strapping
- e. Layout
- f. Reference lines
- g. Shims

Carpenter

Unit: E2.8 Practicum: Interior Finish

Level: Four

Duration: 10 Hours

Theory: 0 Hours

Practical: 10 Hours

Overview:

This unit of instruction is designed to provide practical experience selecting/installing architectural interior mouldings.

Objectives and Content:

**Percent of
Unit Mark (%)**

1. Install casing.

50%

- a. Adhesives
- b. Apron
- c. Capitols
- d. Doors/windows
- e. Joints
- f. Fasteners
- g. Mullion
- h. Muntin
- i. Plinths
- j. Reveal
- k. Selection
- l. Sequence
- m. Stool
- n. Stops

2. Install architectural interior mouldings.

50%

- a. Adhesives
- b. Baseboard
- c. Batten
- d. Bed moulding
- e. Chair-rail
- f. Cove/scotia
- g. Crown moulding
- h. Fasteners
- i. Half-round
- j. Horizontal mouldings
- k. Internal/external corners

- l. Joints
- m. Picture rail
- n. Plate rail
- o. Solid
- p. Sprung

Carpenter

Unit: F2.0 Computer Applications and the Carpenter Trade

Level: Four

Duration: 20 Hours

Theory: 20 Hours

Practical: 0 Hours

Overview:

This unit of instruction is designed to provide Carpenter apprentices with general skills and knowledge required to benefit from computer technology as it currently applies to the trade, and to serve as a foundation for further learning which technological change will make necessary during their careers as 21st-century tradespeople.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Describe basic computer components and their functions.	10%
a. Aspects of Windows-platform software	
b. Auxiliary drives	
c. Care/handling of diskettes, CD-ROMs, and DVDs	
d. CPU	
e. DOS	
f. Hard drive	
g. Input/output devices	
h. Keyboard	
i. Monitor	
j. Mouse	
k. Parallel, serial and USB ports	
l. Printer	
2. Perform basic word-processing operations.	20%
a. Boot computer and start applications	
b. Execute common commands	
c. Perform file-management tasks	
3. Describe Internet system components.	10%
a. Conceptualizing the Web (including precautions against viruses/trojans)	
b. Routers	
c. File services	
d. Network addresses and bookmarks	
e. Search engines	
4. Perform Web searches using various search engines.	10%
a. Accessing search engines via URL addresses	

- b. Selecting/using key words to guide searches
 - c. Filtering/refining and organizing search results
- 5. Send/receive e-mail messages. 20%**
- a. Accessing public domain e-mail services
 - b. E-mail addresses
 - c. Sending/retrieving e-mail
 - d. Replying to/forwarding e-mail
 - e. E-mail attachments (text/graphics)
 - f. E-mail website links
- 6. Identify/describe important areas of trade practice to which computer technology is applied. 25%**
- a. Communications and general documentation
 - b. Business records (including payroll) and project management
 - c. Cost estimating, preparing tenders, and cost control
 - d. Optimized use of sheet-goods and other construction materials
 - e. Architectural, survey, and other technical documents
 - f. CAD, CAD/CAM, and CNC applications in production (e.g., casegoods, architectural millwork, and trusses)
 - g. Kitchen/bathroom design
 - h. Customer relations (e.g., 3-D rendering of renovation projects)
 - i. Other (as specified by instructor)
- 7. Identify methods/resources for ongoing, self-directed learning re: personal knowledge of trade-related computer applications. 5%**
- a. Conventional trade periodicals and books
 - b. Subject-specific websites, e-publications, and listserv groups
 - c. CD-ROMS, DVDs, and other instructional software

Carpenter

Unit: F3.0 Pre-Certification Review

Level: Four

Duration: 82 Hours

Theory: 82 Hours

Practical: 0 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 pertinent information about the broad significance of Red Seal Interprovincial certification and the main features of the Interprovincial exam. Trade-specific content is enriched with information about practical strategies/resources for mastering study materials. It is intended that apprentices who seriously tackle the objectives of this unit should be able to approach the Interprovincial (IP) exam with well-founded confidence. But the unit also promotes a consolidation of study practices, trade knowledge, and self-awareness to help meet the longer-term requirements of further learning throughout one's working life as a certified journeyman.

Note: No testing is prescribed for this instructional unit *per se*. Instead, a "Pass/Fail" grade will be awarded upon completion of the unit.

Objectives and Content:

**Percent of
Unit Mark (%)**

- | | |
|---|-----------------------|
| <ol style="list-style-type: none"> 1. Describe the significance, format, and general content of Interprovincial (Red Seal) Examinations for the Carpenter. <ol style="list-style-type: none"> a. Scope and aims of Red Seal system; value of certification b. Obligations/entitlements of candidates for IP certification <ul style="list-style-type: none"> • Relevance of IP Examination to current, accepted trade practices; industry-based national validation of test items • Apprenticeship Manitoba policies re: exam re-writes • Confidentiality of examination content; the certified journeyman's own stake in examination security (value of credential) • Limitations on use of calculators (e.g., dedicated, pre-programmed builders' calculator not allowed) c. Multiple-choice (four-option) item format; Red Seal/Apprenticeship Manitoba standards for acceptable test items (e.g., no "trick"-type questions; specifications for use of metric/imperial units) d. Important government materials relevant to the IP Examination for apprentice carpenters <ul style="list-style-type: none"> • National Occupational Analysis (NOA); prescribed scope of the skills and knowledge which comprise the trade • NOA "Pie-chart" and its relationship to content-distribution of IP Examination items • National Building Code's relationship to examination content; availability of NBC excerpts to IP candidates during examination 2. Identify resources, strategies, and other key considerations for maximizing successful completion of written exams used in certifying tradespeople | <p>n/a</p> <p>n/a</p> |
|---|-----------------------|

- a. Personal preparedness
 - Proper rest/nutrition; eye-testing
 - Making room for a personal study regimen: appropriate prior communication with family members, friends, and employers about exam-related commitments/needs; identifying – and concluding – all necessary arrangements for minimizing distractions/disruptions
 - Focused reflection on prior experience – good and bad -- in test situations (e.g., Unit Tests), especially with respect to what the apprentice already has learned about his/her own personal characteristics, learning styles, exam anxiety, and strategies (e.g., time management) for effective performance in test situations
 - b. Self-assessment, consultation, and a Personal Study Plan
 - Preliminary self-assessment of individual strengths/weaknesses in trade-related skills and knowledge; usefulness of old tests; usefulness of Apprenticeship Portfolio checklists and reflection on both the in-school and on-the-job components of the Apprenticeship Program in Carpentry, as well as the inter-relationship between these two components; usefulness of consultation with journeypersons, appropriate peers, the Apprenticeship Training Coordinator and/or other trade mentors
 - Use(s) of approved textbooks, chapter tests, study guides, and note-taking in preparing for an examination
 - Study groups: perils and possibilities
 - Formulation, and submission for instructor’s comments, of a personal study plan, including an approximate timetable, which describes/schedules a course of action for reviewing all relevant material(s) and for strengthening areas of deficient skills/knowledge in anticipation of the Red Seal Examination
- 3. Review program content re: theory of building materials. n/a**
- a. Wood and wood products
 - b. Non-wood products
 - c. Concrete and concrete products
 - d. Concrete theory/practical
 - e. Fasteners/adhesives; sealants/fillers
 - f. Building envelope
- 4. Review program content re: tools and equipment. n/a**
- a. Anchor bolts
 - b. Concrete
 - c. Excavation
 - d. Miscellaneous inserts
- 5. Review program content re: construction safety. n/a**
- a. Personal protective equipment/clothing
 - b. Fall protection
 - c. Working environments
 - d. Industrial health hazards
 - e. Statutory documents
- 6. Review program content re: construction documents and quantity surveying. n/a**
- a. Construction documents.
 - b. Quantity surveying
- 7. Review program content re: building-science principles and trade mathematics. n/a**
- a. Building science principles and techniques
 - b. Construction mathematics/geometry

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|---|------------|
| 8. Review program content re: site layout (theory and applications). | n/a |
| 9. Review program content re: access and temporary structures. | n/a |
| <ul style="list-style-type: none"> a. Ladders and ramps b. Access and temporary structures c. Suspended access equipment d. Hoarding | |
| 10. Review program content re: formwork (theory and practice). | n/a |
| <ul style="list-style-type: none"> a. Footing, slab-on-grade, and grade beam forms b. Wall, column, pier, and pile forms c. Stair forms d. Forms for precast | |
| 11. Review program content re: frame structure (theory and practice). | n/a |
| <ul style="list-style-type: none"> a. Beam and support framing b. Floor framing c. Wall and partition framing d. Roof framing | |
| 12. Review program content re: exterior carpentry (theory and practice). | n/a |
| <ul style="list-style-type: none"> a. Windows b. Roof coverings c. Wall coverings and trim | |
| 13. Review program content re: exterior carpentry (theory and practice). | n/a |
| <ul style="list-style-type: none"> a. Flooring b. Wall coverings c. Ceilings d. Doors and jambs e. Hardware, accessories, and fixtures f. Stairs g. Cabinets h. Interior finish | |
| 14. Review significance, format, and uses of the National Building Code. | n/a |
| <ul style="list-style-type: none"> a. Importance and applicability of the Code to carpentry practice in Canada b. Practical use of the code <ul style="list-style-type: none"> • Contents and scope • Index and other aids to navigation c. Performing calculations using Code material (e.g., lintels, beams, supported joist-lengths, rafters, fasteners, etc.) | |
| 14. Review program content re: renovation-specific carpentry. | n/a |
| <ul style="list-style-type: none"> a. Scope, significance, and general requirements b. Procedures to remove materials c. Procedures to protect structures during renovation projects d. Procedures for joining new construction to old e. Procedures to change existing structures and building-components | |

Carpenter

Unit: F4.0 Orientation to Journeywork: Skills Coaching

Level: Four

Duration: 14 Hours

Theory: 14 Hours

Practical: 0 Hours

Overview:

Carpenter 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. Carpenters have a particularly rich tradition of refreshing and sharing their trade skills from one generation of trade 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 are neither mandatory nor exhaustive. This content reflects 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, detailed 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 (%)**

- | | |
|--|------------|
| 1. Describe the scope, substance, and significance of journey-level status | 20% |
| <ul style="list-style-type: none"> a. Historical background, including trainee experiences <ul style="list-style-type: none"> • Origin, definition, and examples of journey-level status • Obligations to employers, trade clients, and apprentices • Concept of skills stewardship, and its rationale • Customary responsibilities of journeyperson as workplace trainer/supervisor • Overview development of formal systems for regulating/recognizing journey-level competence in designated apprenticeable trades • Contributions of 'unticketed journeymen' and other informally-qualified Carpenter to workplace trade-learning • Achievements/limitations of informal systems for workplace training • Trends (e.g., succession planning in the trades; recognition of credentials and prior learning; defined standards for on-the-job trades education and training) b. Regulatory/legal dimensions of journey-level status in designated trades <ul style="list-style-type: none"> • Rights and obligations re: Canada's Interprovincial 'Red Seal' program (Red Seal rationale, scope, and products, including the National Occupational Analysis NOA), and Interprovincial examinations | |

- Manitoba provincial requirements [e.g., *Apprenticeship and Certification Act; General Regulation; the Carpenter Trade Regulation*; relevant policies of the Apprenticeship and Certification 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.

2. Compare/contrast role-options and responsibilities of the supervising journeyperson **40%**

- 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
- 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. **40%**

- a. Review Unit A0.1 content re: challenges/opportunities 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 (NOA), including responsibility re: logbook sign-off (where applicable)
 - Consultation with Apprenticeship Training Coordinator (ATC), Manitoba Apprenticeship
 - 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)
