NOVA SCOTIA
APPRENTICESHIP
AGENCY

NOVA SCOTIA CURRICULUM STANDARD

GLAZIER

Based on the Red Seal Occupational Standard

NSCS V1 | 2022

Atlantic Apprenticeship Curriculum Standard

Glazier

Preface

This Nova Scotia Curriculum Standard (NSCS) is intended to assist instructional staff in the design and delivery of technical, in-class training in support of the apprenticeship program.

This NSCS contains all the technical training elements required to complete the apprenticeship program and has been developed based on the 2020 Red Seal Occupational Standard (RSOS) for the trade.

Implementation of the NSCS for Apprenticeship training is outlined in the following table.

Level	Implementation Effective
Level 1	2022-2023
Level 2	2023-2024
Level 3	2024-2025

The above implementation schedule was current at time of publication.

Granting of credit or permission to challenge level examinations (if applicable) for pre-apprenticeship training for this trade will be based on the content outlined in this standard. Training providers must contact the Nova Scotia Apprenticeship Agency for more information on the process and requirements for determining eligibility for credit towards an apprenticeship program.

Acknowledgements

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User Guide

Nova Scotia Curriculum Standards (NSCS) are developed based on Red Seal Occupational Standards (RSOS) or Nova Scotia Occupational Standards (NSOS) and industry consultation. This document represents the minimum content to be delivered as part of the apprenticeship program for this trade.

The NSCS documents are purposefully constructed for ease of use and flexibility of structure in order to adapt to all delivery requirements. They detail units of training, unit outcomes and objectives. They do not impose a delivery model or teaching format.

Training providers will select and develop delivery materials and techniques that accommodate a variety of learning styles and delivery patterns. The NSCS does not dictate study materials, textbooks or learning activities to be used in delivery.

This document includes a Level Structure to facilitate mobility for apprentices moving from one jurisdiction to another.

Structure

The content of the NSCS is divided into units. Unit codes are used as a means of identification and are not intended to convey the order of delivery. It is at the discretion of the training provider to deliver the content in the required logical sequence of delivery within the level. Units may be delivered one at a time or concurrently within a level, provided all outcomes are met.

The Learning Outcomes describe what the apprentice should know or be able to do at the end of training. Wording of the Learning Outcomes, “Demonstrate knowledge of…” acknowledges the broad spectrum of ways in which knowledge can be assessed (i.e. practical projects, multiple choice testing, presentations, etc.) by instructional staff within the training.

User Guide (continued)

The Occupational Standard (OS) to Curriculum Comparison chart maps the OS trade skills/sub-tasks to the curriculum standard.

Each unit of training in the curriculum standard lists both theoretical and practical objectives, which represent the minimum content that must be covered during technical training. Detailed content/bulleted lists for each objective have not been developed. Where detail is required for clarity, content has been provided.

The practical objectives represent the tasks/skills that apprentices must be exposed to during technical training. An individual or group performance of the task/skill is recommended; if not possible, an instructor demonstration is acceptable. Training Providers should use practical, hands-on learning whenever possible, whether identified in the curriculum standard as a practical objective or not.

Each unit also provides suggested hours (a guide only), which can be adjusted for apprentice learning, delivery methods, practical/hands-on learning, examinations, registration, holidays, storm days, etc.

Glossary of Terms

These definitions are intended as a guide to how language is used in the document.

ADJUST	To put in good working order; regulate; bring to a proper state or position.
APPLICATION	The use to which something is put and/or the circumstance in which an individual would use it.
CHARACTERISTIC	A feature that helps to identify, tell apart or describe recognizably; a distinguishing mark or trait.
COMPONENT	A part that can be separated from or attached to a system; a segment or unit.
DEFINE	To state the meaning of (a word, phrase, etc.).
DESCRIBE	To give a verbal account of; tell about in detail.
EXPLAIN	To make plain or clear; illustrate; rationalize.
IDENTIFY	To point out or name objectives or types.
INTERPRET	To translate information from observation, charts, tables, graphs and written material.
MAINTAIN	To keep in a condition of good repair or efficiency.
METHOD	A means or manner of doing something that has procedures attached to it.
OPERATE	How an object works; to control or direct the functioning of.
PROCEDURE	A prescribed series of steps taken to accomplish an end.
PURPOSE	The reason for which something exists or is done, made or used.

Glossary of Terms (continued)

SERVICE	Routine inspection and replacement of worn or deteriorating parts. An act or business function provided to a customer in the course of an individual's profession (e.g., haircut).
TECHNIQUE	Within a procedure, the manner in which technical skills are applied.
TEST	v. To subject to a procedure that ascertains effectiveness, value, proper function or other quality. n. A way of examining something to determine its characteristics or properties, or to determine whether or not it is working correctly.
TROUBLESHOOT	To follow a systematic procedure to identify and locate a problem or malfunction and its cause.

Essential Skills Profiles

Through extensive research, the Government of Canada and other national and international agencies have identified and validated key essential skills for the workplace. These skills are used in nearly every job and at different levels of complexity. They provide the foundation for learning all other skills and enable people to evolve with their jobs and adapt to workplace change.

Essential Skills Profiles describe how workers in various occupations use each of the key essential skills. They include:

- a brief description of the occupation;
- examples of tasks that illustrate how each essential skill is applied; and,
- complexity ratings that indicate the level of difficulty of the example tasks.

Essential Skills profiles can be found on the Employment and Social Development Canada (ESDC) website at https://www.canada.ca/en/services/jobs/training/initiatives/skills-success/tools.html

The development and improvement of these Essential Skills is inherent throughout the apprenticeship training program as apprentices work towards achieving journeyperson status.

Profile Chart

Performs Common Occupational Skills			
MENT-700 Mentoring I	MENT-701 Mentoring II	GLZ-100 Safety	GLZ-105 Tools and Equipment
GLZ-300 Advanced Layout and Measuring Equipment	GLZ -110 Access Equipment	GLZ-115 Rigging, Hoisting and Lifting Equipment I	GLZ-310 Rigging, Hoisting and Lifting Equipment II
GLZ-130 Trade Documentation	GLZ-135 Drawings and Specifications I	GLZ-140 Sealants and Adhesives	GLZ-145 Fasteners
GLZ-120 Glazier Trade Math I	GLZ-155 Material Handling and Storage	GLZ-200 Glazier Trade Math II	GLZ-205 Drawings and Specifications II
GLZ-305 Drawings and Specifications III	GLZ-355 Job Planning		
Fabricates and Installs Commercial Window and Door Systems			
GLZ-150 Glass Cutting and Edging I	GLZ-225 Glass Cutting and Edging II	GLZ-330 Glass Cutting and Edging III	GLZ-210 Flashing
GLZ-175 Building Envelope Membranes	GLZ-160 Commercial Window Systems I	GLZ-220 Commercial Window Systems II	GLZ-165 Storefront Systems I
GLZ-230 Storefront Systems II	GLZ-170 Curtain Walls I	GLZ-235 Curtain Walls II	GLZ-320 Curtain Walls III
GLZ-215 Commercial Entrance Systems I	GLZ-315 Commercial Entrance Systems II		
Installs Residential Window and Door Systems			
GLZ-240 Residential Window Systems	GLZ-245 Residential Door Systems		
Fabricates and Installs Specialty Glass, Products and Glass Systems			
GLZ-255 Mirrors and Back-Painted Glass	GLZ-260 Guardrails, Handrails and Balustrades	GLZ-265 Specialty Glass and Products I	GLZ-335 Specialty Glass and Products II
GLZ-340 Shower Enclosures	GLZ-345 Solariums	GLZ-350 Skylights and Sloped Glazing Systems	

Profile Chart (continued)

Performs Servicing			
GLZ-325 Commercial Window and Door Service	Integrated throughout various units		

Level Structure

Level 1, 6 Weeks (180 hrs)

Code	Unit Title	Hrs *	Pg	Practical Objectives*
MENT-700	Mentoring I	6	22	
GLZ-100	Safety	12	24	
GLZ-105	Tools and Equipment	12	26	1. Use basic tools and equipment.
GLZ-110	Access Equipment	6	28	
GLZ-115	Rigging, Hoisting and Lifting Equipment	6	30	1. Tie knots. 2. Perform standard hand signals.
GLZ-120	Glazier Math I	12	33	
GLZ-130	Trade Documentation	6	34	
GLZ-135	Drawings and Specifications I	6	36	1. Interpret information found on drawings.
GLZ-140	Sealants and Adhesives	12	38	1. Run a bead of caulking.
GLZ-145	Fasteners	3	40	
GLZ-150	Glass Cutting and Edging I	12	42	1. Cut glass to a specified size.
GLZ-155	Material Handling and Storage	9	44	
GLZ-160	Commercial Window Systems I	6	46	
GLZ-165	Storefront Systems I	30	48	1. Fabricate a small frame. 2. Install and glaze a small frame.
GLZ-170	Curtain Walls I	30	51	1. Fabricate a basic curtain wall. 2. Glaze and finish a basic curtain wall.
GLZ-175	Building Envelope Membranes	12	53	1. Install building envelope membranes.

Level Structure (continued)

Level 2, 6 Weeks (180 hrs)

Code	Unit Title	Hrs*	Pg	Practical Objectives*
GLZ-200	Glazier Trade Math II	6	56	1. Perform calculations to determine measurements and dimensions.
GLZ-205	Drawings and Specifications II	6	57	1. Interpret shop and fabrication drawings. 2. Produce a simple material list.
GLZ-210	Flashing	12	59	1. Form and install flashing.
GLZ-215	Commercial Entrance Systems I	6	61	
GLZ-220	Commercial Window Systems II	30	63	1. Fabricate a strip window assembly. 2. Assemble and glaze a window frame.
GLZ-225	Glass Cutting and Edging II	9	66	1. Perform a basic edge treatment.
GLZ-230	Storefront Systems II	24	68	1. Fabricate a doorframe and sidelight. 2. Install a door and sidelight.
GLZ-235	Curtain Walls II	24	71	1. Fabricate a curtain wall with an entrance. 2. Install and glaze a curtain wall.
GLZ-240	Residential Window Systems	3	74	
GLZ-245	Residential Door Systems	3	77	
GLZ-250	Residential Window and Door Service	3	80	
GLZ-255	Mirrors and Back-Painted Glass	18	82	1. Measure and lay out a mirror wall. 2. Cut and edge treat mirrors 3. Install a mirror to specifications.
GLZ-260	Guardrails, Handrails and Balustrades	18	85	1. Install a basic handrail.
GLZ-265	Specialty Glass and Products I	18	88	

Level Structure (continued)

Level 3, 6 Weeks (180 hrs)

Code	Unit Title	Hrs*	Pg	Practical Objectives*
MENT-701	Mentoring II	6	92	
GLZ-300	Advanced Layout and Measuring Equipment	12	93	
GLZ-305	Drawings and Specifications III	6	95	1. Produce a material list. 2. Produce a basic shop drawing.
GLZ-310	Rigging, Hoisting and Lifting Equipment II	6	97	
GLZ-315	Commercial Entrance Systems II	12	99	
GLZ-320	Curtain Walls III	6	102	
GLZ-325	Commercial Window and Door Service	9	104	
GLZ-330	Glass Cutting and Edging III	15	106	1. Cut glass shapes.
GLZ-335	Specialty Glass and Products II	27	108	1. Practical hands-on learning activity to be determined by instructor.
GLZ-340	Shower Enclosures	12	112	1. Install a shower door.
GLZ-345	Solariums	6	115	
GLZ-350	Skylights and Sloped Glazing Systems	27	117	1. Measure, fabricate and install a skylight.
GLZ-355	Job Planning	6	120	
GLZ-360	Program Review	30	122	

***Hours:** The time it should take to cover the unit (a guide only).

***Practical Objectives:** The tasks/skills apprentices must be exposed to during technical training. An individual or group performance of the task/skill is recommended; if not possible, an instructor demonstration is acceptable. Training Providers should use practical, hands-on learning whenever possible, whether identified in the curriculum as a practical objective or not.

2020 Occupational Standard Sub-task to Curriculum Unit Comparison

RSOS Sub-task		AACS Unit	
Task A-1 – Performs safety-related functions.			
A-1.01	Maintains safe work environment.	GLZ-100	Safety
A-1.02	Uses personal protective equipment (PPE) and safety equipment.	GLZ-100	Safety
Task A-2 – Uses tools and equipment.			
A-2.01	Uses hand tools.	GLZ-105	Tools and Equipment
A-2.02	Uses portable and stationary power tools.	GLZ-105	Tools and Equipment
A-2.03	Uses layout and measuring equipment.	GLZ-105	Tools and Equipment
		GLZ-300	Advanced Layout and Measuring Equipment
A-2.04	Uses access equipment.	GLZ-110	Access Equipment
Task A-3 – Uses rigging, hoisting and lifting and equipment.			
A-3.01	Uses rigging equipment.	GLZ-115	Rigging, Hoisting and Lifting Equipment I
		GLZ-310	Rigging, Hoisting and Lifting Equipment II
A-3.02	Uses hoisting and lifting equipment.	GLZ-115	Rigging, Hoisting and Lifting Equipment I
		GLZ-310	Rigging, Hoisting and Lifting Equipment II
Task A-4 – Organizes work.			
A-4.01	Uses documentation and reference material.	GLZ-130	Trade Documentation
		GLZ-355	Job Planning
A-4.02	Interprets plans, drawings and specifications.	GLZ-135	Drawings and Specifications I
		GLZ-135	Drawings and Specifications II
		GLZ-135	Drawings and Specifications III
		GLZ-355	Job Planning
A-4.03	Prepares a list of materials and supplies	GLZ-205	Drawings and Specifications II
		GLZ-205	Drawings and Specifications III
A-4.04	Plans project tasks	GLZ-355	Job Planning
Task A-5 – Performs trade activities.			
A-5.01	Prepares worksite.	GLZ-355	Job Planning
A-5.02	Handles glass and other materials.	GLZ-155	Material Handling and Storage

RSOS Sub-task		AACS Unit	
A-5.03	Prepares materials for installation.		Throughout program
A-5.04	Stores glass and other materials.	GLZ-155	Material Handling and Storage
A-5.05	Performs glass cutting and edge treatment.	GLZ-150	Glass Cutting and Edging I
		GLZ-225	Glass Cutting and Edging II
		GLZ-330	Glass Cutting and Edging III
A-5.06	Installs building envelope membranes.	GLZ-175	Building Envelope Membranes
A-5.07	Installs flashing.	GLZ-210	Flashing
A-5.08	Applies sealants.	GLZ-140	Sealants and Adhesives
Task A-6 – Uses communication and mentoring techniques.			
A-6.01	Uses communication techniques.	MENT-700	Mentoring
		MENT-701	Mentoring
A-6.02	Uses mentoring techniques.	MENT-700	Mentoring
		MENT-701	Mentoring
Task B-7 – Fabricates commercial window and door systems.			
B-7.01	Fabricates curtain walls.	GLZ-235	Curtain Walls II
		GLZ-320	Curtain Walls III
B-7.02	Fabricates storefronts.	GLZ-165	Storefront Systems I
		GLZ-230	Storefront Systems II
B-7.03	Fabricates window systems.	GLZ-160	Commercial Window Systems I
		GLZ-220	Commercial Window Systems II
B-7.04	Fabricates skylights and sloped glazing systems.	GLZ-350	Skylights and Sloped Glazing Systems
B-7.05	Fabricates entrance systems	GLZ-215	Commercial Entrance Systems I
		GLZ-230	Storefront Systems II
		GLZ-315	Commercial Entrance Systems II
Task B-8 – Installs commercial window and door systems.			
B-8.01	Lays out commercial window and door systems.	GLZ-160	Commercial Window Systems I
		GLZ-215	Commercial Entrance Systems I
		GLZ-220	Commercial Window Systems II
		GLZ-230	Storefront Systems II
		GLZ-315	Commercial Entrance Systems II
B-8.02	Installs curtain wall systems.	GLZ-170	Curtain Walls I
		GLZ-235	Curtain Walls II

RSOS Sub-task		AACS Unit	
		GLZ-320	Curtain Walls III
B-8.03	Installs storefront systems.	GLZ-165	Storefront Systems I
		GLZ-230	Storefront Systems II
B-8.04	Installs window systems.	GLZ-160	Commercial Window Systems I
		GLZ-220	Commercial Window Systems II
B-8.05	Installs skylights and sloped glazing systems.	GLZ-350	Skylights and Sloped Glazing Systems
B-8.06	Installs entrance systems.	GLZ-230	Storefront Systems II
		GLZ-315	Commercial Entrance Systems II
Task C-9 – Installs residential window systems.			
C-9.01	Lays out residential window systems.	GLZ-2xx	Residential Window Systems
C-9.02	Sets windows in openings.	GLZ-2xx	Residential Window Systems
C-9.03	Glazes windows.	GLZ-2xx	Residential Window Systems
Task C-10 – Installs residential door systems.			
C-10.01	Lays out residential door systems.	GLZ-240	Residential Door Systems
C-10.02	Assembles residential door frames.	GLZ-245	Residential Door Systems
C-10.03	Sets residential doors and frames.	GLZ-245	Residential Door Systems
C-10.04	Installs residential door hardware	GLZ-245	Residential Door Systems
C-10.05	Glazes residential doors	GLZ-245	Residential Door Systems
Task D-11 – Fabricates and installs commercial specialty glass and products.			
D-11.01	Lays out commercial specialty glass and products.	GLZ-260	Guardrails, Handrails and Balustrades
		GLZ-335	Specialty Glass and Products II
		GLZ-340	Shower Enclosures
D-11.02	Assembles commercial specialty glass, products and hardware.	GLZ-260	Guardrails, Handrails and Balustrades
		GLZ-335	Specialty Glass and Products II
		GLZ-340	Shower Enclosures
D-11.03	Installs commercial specialty glass and products.	GLZ-260	Guardrails, Handrails and Balustrades
		GLZ-335	Specialty Glass and Products II
		GLZ-340	Shower Enclosures

RSOS Sub-task		AACS Unit	
Task D-12 – Fabricates and installs residential specialty glass and products.			
D-12.01	Lays out residential specialty glass and products.	GLZ-255	Mirrors and Back-Painted Glass
		GLZ-260	Guardrails, Handrails & Balustrades
		GLZ-265	Specialty Glass and Products I
		GLZ-335	Specialty Glass and Products II
		GLZ-340	Shower Enclosures
		GLZ-345	Solariums
D-12.02	Assembles residential specialty glass, products and hardware.	GLZ-255	Mirrors and Back-Painted Glass
		GLZ-260	Guardrails, Handrails & Balustrades
		GLZ-265	Specialty Glass and Products I
		GLZ-335	Specialty Glass and Products II
		GLZ-340	Shower Enclosures
		GLZ-345	Solariums
D-12.03	Installs residential specialty glass and products	GLZ-255	Mirrors and Back-Painted Glass
		GLZ-260	Guardrails, Handrails & Balustrades
		GLZ-265	Specialty Glass and Products I
		GLZ-335	Specialty Glass and Products II
		GLZ-340	Shower Enclosures
		GLZ-345	Solariums
Task E-13 – Services commercial window and door systems.			
E-13.01	Assesses service requirements for commercial window & door systems.	GLZ-325	Commercial Window and Door Service
E-13.02	Repairs commercial window and door systems.	GLZ-325	Commercial Window and Door Service
Task E-14 – Services residential window and door systems.			
E-14.01	Assesses service requirements for residential window and door systems.	GLZ-240	Residential Window Systems
		GLZ-245	Residential Door Systems
E-14.02	Repairs residential window and door systems.	GLZ-240	Residential Window Systems
		GLZ-245	Residential Door Systems
Task E-15 – Repairs faulty systems and components.			
E-15.01	Assesses service requirements for specialty glass and products.	GLZ-335	Specialty Glass and Products II
E-15.02	Repairs specialty glass and products.	GLZ-335	Specialty Glass and Products II

Level 1
6 Weeks (180 hours)

MENT-700 Mentoring I

Learning Outcomes:

- Demonstrate knowledge of effective communication practices as a learner.
- Demonstrate knowledge of strategies for learning skills in the workplace.

Red Seal Occupational Standard Reference:

A-6.01 Uses communication techniques
A-6.02 Uses mentoring techniques

Suggested Hours:

6 hours

Theoretical Objectives:

1. Describe the importance of one's own individual experiences.

2. Identify behaviours that demonstrate positive learning experiences.

3. Identify the benefits of workplace mentoring for the apprentice, mentor, and employer.

4. Identify the partners involved in apprenticeship training.

5. Describe the shared responsibilities for workplace learning in apprenticeship.

6. Identify different learning needs and strategies to address challenges or barriers in the workplace.
   i) learning disabilities
   ii) language
   iii) underrepresentation

7. Identify the components that create a positive and inclusive workplace culture.
   i) workplace characteristics
   ii) individual behaviours

8. Identify various learning styles and determine one’s own learning preferences.

9. Explain how learning preferences impact learning new skills.

10. Identify different learning strategies to meet individual learning needs.

11. Describe the importance of adapting to a variety of teaching and learning methods in the workplace.

12. Identify techniques for effective communication as a learner.
    i) verbal and non-verbal
    ii) active listening

13. Identify and describe personal responsibilities and attitudes that contribute to on-the-job success.
    i) self advocating
    ii) asking questions
    iii) accepting constructive feedback
    iv) working safely
    v) employing time management techniques and being punctual

Practical Objectives:

N/A

GLZ-100 Safety (12 hrs)

Learning Outcomes:

- Demonstrate knowledge of safe work practices and procedures.
- Demonstrate knowledge of regulatory requirements pertaining to personal protective equipment (PPE), safety and safety equipment.
- Demonstrate knowledge of PPE and safety equipment, their applications, limitations, maintenance, storage and procedures for use.

Red Seal Occupational Standard Reference:

1.01 Maintains safe work environment.
1.02 Uses personal protective equipment (PPE) and safety equipment.

Suggested Hours:

12 Hours

Theoretical Objectives:

1. Identify workplace hazards and describe safe work practices.
   - i) site conditions
   - ii) fall hazards
   - iii) tripping hazards
   - iv) work being performed
   - v) hazardous materials (asbestos)

2. Identify and interpret workplace health and safety regulations pertaining to the use of PPE and safety equipment.
   - i) Globally Harmonized System/Workplace Hazardous Materials Information System (WHMIS)
   - ii) Occupational Health and Safety (OHS)

3. Identify certification and training requirements for PPE and safety equipment.

4. Identify types of PPE and safety equipment and describe their applications, limitations and procedures for use.
   - i) PPE
     - hard hats
     - safety glasses
     - safety footwear
     - hearing protection

- fall arrest equipment
- respirators
- face shields
- high-visibility vest

ii) Safety equipment
- first aid kits
- fire extinguishers
- eye wash stations

5. Describe the importance of locating PPE and safety equipment.

6. Describe the importance of expiry dates on PPE and safety equipment.

7. Describe safety data sheets (SDS) and their use.

8. Describe workers' rights and responsibilities.

9. Describe the responsibilities of suppliers and employers.

10. Describe safety policies, procedures and requirements.

11. Describe site-specific work permit procedures.

12. Describe the procedures used to inspect, maintain and store PPE and safety equipment.

13. Describe good housekeeping practices.
    i) sweeping
    ii) removing debris
    iii) storing materials and tools and equipment

Practical Objectives

N/A

GLZ-105 Tools and Equipment (12 hrs)

Learning Outcomes:

- Demonstrate knowledge of hand tools and their applications, limitations and maintenance.
- Demonstrate knowledge of portable and stationary power tools and their applications, limitations and maintenance.
- Demonstrate knowledge of basic layout and measuring equipment and their applications, limitations and maintenance.

Red Seal Occupational Standard Reference:

2.01 Uses hand tools.
2.02 Uses portable and stationary power tools.
2.03 Uses layout and measuring equipment.

Suggested Hours:

12 Hours

Theoretical Objectives:

1. Define terminology associated with tools and equipment.

2. Identify hazards and describe safe work practices and procedures pertaining to the use of tools and equipment.
   i) hand tools
   ii) portable and stationary power tools
   iii) layout and measuring equipment

3. Identify types of hand tools and describe their applications and procedures for use.

4. Identify types of portable and stationary power tools and describe their applications and procedures for use.

5. Identify portable and stationary power tool components and describe their characteristics and applications.
   i) blades
   ii) driver tips
   iii) drill bits

6. Identify types of basic layout and measuring equipment and describe their applications and procedures for use.

7. Describe the procedures used to inspect, maintain and store hand tools.

8. Describe the procedures used to inspect, maintain and store portable and stationary power tools.

9. Describe the procedures used to inspect, maintain and store basic layout and measuring equipment.

Practical Objectives

1. Use basic tools and equipment.

GLZ-110 Access Equipment (6 hrs)

Learning Outcomes:

- Demonstrate knowledge of access equipment, their applications, maintenance and procedures for use.
- Demonstrate knowledge of fall protection equipment, their applications, maintenance and procedures for use.
- Demonstrate knowledge of regulatory requirements pertaining to access and fall protection equipment.

Red Seal Occupational Standard Reference:

2.04 Uses access equipment.

Suggested Hours:

6 Hours

Theoretical Objectives:

1. Define terminology associated with access equipment.

2. Identify hazards and describe safe work practices and procedures pertaining to the use of access equipment.
   i) overhead/power lines
   ii) uneven surfaces
   iii) pinch points
   iv) falls

3. Interpret standards and regulations pertaining to access and fall protection equipment.

4. Interpret information pertaining to access equipment found on drawings and specifications.

5. Identify types of access equipment and describe their applications, limitations and procedures for use.
   i) ladders
   ii) scaffolds/railings
   iii) mobile equipment

6. Identify types of fall protection equipment and describe their applications, limitations and procedures for use.

i) harnesses
ii) waist belts
iii) nets
iv) hardware

7. Identify factors to consider when selecting access equipment.
   i) safety
   ii) load characteristics
   iii) environment
   iv) application

8. Describe safe angle of ladders.

9. Describe the three-point contact rule.

10. Describe the importance of being aware of worksite surroundings.
    i) trenching
    ii) pits
    iii) drop-offs

11. Describe the procedures used to erect and dismantle ladders and scaffolding.

12. Describe the procedures used to inspect, maintain and store access equipment.

13. Describe the procedures used to inspect, maintain and store fall protection equipment.

Practical Objectives

N/A

GLZ-115 Rigging, Hoisting and Lifting Equipment I (6 hrs)

Learning Outcomes:

- Demonstrate knowledge of rigging equipment, their applications, maintenance and procedures for use.
- Demonstrate knowledge of hoisting and lifting equipment, their applications, and maintenance.
- Demonstrate knowledge of communication methods used during rigging, hoisting and lifting operations.

Red Seal Occupational Standard Reference:

3.01 Uses rigging equipment
3.02 Uses hoisting and lifting equipment

Suggested Hours:

6 Hours

Theoretical Objectives:

1. Define terminology associated with rigging, hoisting and lifting equipment.

2. Identify hazards and describe safe work practices pertaining to the use of rigging, hoisting and lifting equipment.
   i) powerlines
   ii) uneven surfaces
   iii) excessive loads
   iv) centre of gravity
   v) weather
   vi) equipment damage
   vii) slippery surfaces

3. Interpret standards and regulations pertaining to rigging, hoisting and lifting equipment.
   i) training and certification requirements

4. Explain the fundamental principles of hoisting and lifting.
   i) mechanical advantage
   ii) balance point

5. Describe loads which should be lifted mechanically.

6. Identify types of basic rigging equipment and attachments and describe their applications, limitations, and procedures for use
   i) slings
   ii) hardware

7. Identify types of hoisting and lifting equipment and attachments and describe their applications and limitations.
   i) cranes
   ii) boom trucks
   iii) manipulators
   iv) lift trucks
   v) power cups

8. Identify types of knots, hitches and bends and describe their applications and associated procedures.
   i) half hitch
   ii) clove hitch
   iii) bowline
   iv) figure-eight

9. Identify types of ropes and describe their characteristics and applications.
   i) fibre
   ii) wire

10. Identify factors to consider when selecting rigging, hoisting and lifting equipment.
   i) load characteristics
      - dimensions
      - shape
      - weight
   ii) environment
   iii) application

11. Identify factors to consider when rigging a load.
   i) load characteristics
   ii) equipment and accessories
   iii) environment
   iv) centre of gravity
   v) attachment locations
   vi) sling angles
   vii) machine capacity/load ratings

12. Identify types of barriers used to protect public and workers.
    i) signs
    ii) barricades
    iii) danger/caution tape

13. Describe communications methods used during rigging, hoisting and lifting operations
    i) standard crane and hoist hand signals
    ii) electronic communications
    iii) audible/visual

14. Perform basic rigging calculations.

15. Describe the procedures used to rig and secure a simple load for hoisting and lifting.

16. Describe correct body mechanics when lifting.

17. Describe loading and unloading procedures.

18. Describe the procedures used to inspect, maintain and store rigging, hoisting and lifting equipment.

Practical Objectives

1. Tie knots.
2. Perform standard hand signals.

GLZ-120 Glazier Trade Math I (12 hrs)

Learning Outcomes:

- Demonstrate knowledge of basic mathematical calculations and formulas used in the trade.

Red Seal Occupational Standard Reference:

N/A

Suggested Hours:

12 Hours

Theoretical Objectives:

1. Describe metric and imperial systems of measurement.

2. Perform basic mathematical calculations.
   - i) whole numbers
   - ii) decimals
   - iii) fractions
   - iv) ratios

3. Perform conversions.
   - i) metric to imperial
   - ii) imperial to metric
   - iii) fractions to decimals
   - iv) decimals to fractions

4. Solve problems using basic trade formulas.

Practical Objectives

N/A

GLZ-130 Trade Documentation (6 hrs)

Learning Outcomes:

- Demonstrate knowledge of trade-related documentation, its purpose and use.
- Demonstrate knowledge of procedures to complete and interpret documentation.

Red Seal Occupational Standard Reference:

4.01 Uses documentation and reference material.

Suggested Hours:

Hours

Theoretical Objectives:

1. Define terminology associated with trade documentation.

2. Identify standards and regulations pertaining to safety-related documentation.
   i) site-specific requirements
   ii) OH&S

3. Identify types of work-related documentation and describe their applications.
   i) cut lists
   ii) work orders
   iii) logbooks
   iv) time sheets
   v) estimates

4. Identify types of safety-related documentation and describe their applications.
   i) job hazard assessments
   ii) toolbox meeting records
   iii) first aid logs
   iv) safety manuals
   v) OH&S requirements
   vi) WHMIS symbols
   vii) safety data sheets
   viii) equipment inspection logs

5. Identify types of reference materials and sources of information and describe their applications.
   i) manuals

ii) manufacturers' specifications
iii) standards and regulations
iv) client and site specifications
v) company documentation
vi) drawings and specifications
vii) catalogues
viii) warranties
ix) permits

6. Explain responsibilities associated with completing and signing work-related and safety-related documentation.

7. Describe the procedures used to access, interpret and apply information found in trade documentation and reference material.

8. Describe the procedures used to complete trade documentation.
   i) time sheets

Practical Objectives

N/A

GLZ-135 Drawings and Specifications I (6 hrs)

Learning Outcomes:

- Demonstrate knowledge of drawings and specifications and their applications.

Red Seal Occupational Standard Reference:

4.02 Interprets plans, drawings and specifications.

Suggested Hours:

6 Hours

Theoretical Objectives:

1. Define terminology associated with drawings and specifications.

2. Identify and interpret information found on drawings.
   - i) lines
   - ii) legend
   - iii) symbols and abbreviations
   - iv) notes and specifications
   - vi) schedules
   - vii) units of measurements (metric/imperial)

3. Identify types of specification documents and describe their applications.
   - i) manufacturer
   - ii) engineer
   - iii) contractor
   - iv) client

4. Identify types of drawings and describe their purpose and applications.
   - i) architectural
   - ii) shop
   - iii) fabrication

5. Describe the components of drawings.
   - i) floor plan
   - ii) cross section
   - iii) elevation
   - iv) details

v) scale
vi) schedules
vii) symbols

6. Describe the use of drawings and measurement scales.

Practical Objectives

1. Interpret information found on drawings.

GLZ-140 Sealants and Adhesives (12 hrs)

Learning Outcomes:

- Demonstrate knowledge of sealants, their characteristics, applications and procedures for use.
- Demonstrate knowledge of adhesives, their characteristics, applications and procedures for use.

Red Seal Occupational Standard Reference:

5.08 Applies sealants.

Suggested Hours:

12 Hours

Theoretical Objectives:

1. Define terminology associated with sealants and adhesives.

2. Identify hazards and describe safe work practices pertaining to sealants and adhesives.

3. Identify standards and regulations pertaining to sealants and adhesives.

4. Identify types of tools and equipment used to apply sealants and adhesives and describe their applications and procedures for use.

5. Identify types of sealants and describe their characteristics, properties and applications and procedures for use.
   - i) caulking
     - silicone
     - urethane (one part, two part)
   - ii) butyl
   - iii) polysulfide
   - iv) primer
   - v) tape
   - vi) gaskets

6. Identify types of adhesives and describe their characteristics, properties and applications and procedures for use.
   - i) two-part epoxy
   - ii) ultraviolet (glue)

iii) construction adhesive
iv) silicone

7. Identify types of backup materials and bond breakers and describe their applications and procedures for use.

8. Identify the factors to consider when selecting sealants and adhesives.
   i) manufacturers specifications
   ii) compatibility with substrate
   iii) weathering
   iv) adhesion
   v) movement potential

9. Describe the use of cleaners and primers in preparing substrates.

10. Describe the procedures used to apply sealants.

11. Describe the procedures used to apply adhesives.

Practical Objectives

1. Run a bead of caulking.

GLZ-145 Fasteners (3 hrs)

Learning Outcomes:

- Demonstrate knowledge of fasteners, their characteristics, applications and procedures for use.

Red Seal Occupational Standard Reference:

Throughout

Suggested Hours:

3 Hours

Theoretical Objectives:

1. Define terminology associated with fasteners.

2. Identify hazards and describe safe work practices pertaining to fasteners.

3. Identify standards and regulations pertaining to fasteners.

4. Interpret information pertaining to fasteners found on drawings and specifications.

5. Identify types of tools and equipment used to install fasteners and describe their applications.

6. Identify types of fasteners and describe their characteristics, properties and applications and procedures for use.
   i) rivets
   ii) screws
   iii) nuts and bolts
   iv) plugs
   v) anchors
   vi) nails

7. Identify factors to consider when selecting fasteners.
   i) manufacturers specifications
   ii) compatibility with substrate
   iii) weathering
   iv) movement potential

8. Describe the procedures used to install fasteners.

Practical Objectives

N/A

GLZ-150 Glass Cutting and Edging I (12 hrs)

Learning Outcomes:

- Demonstrate knowledge of glass and glass substitutes and applications.
- Demonstrate knowledge of procedures to inspect, measure and cut glass.
- Demonstrate knowledge of procedures used to perform basic edge treatments.

Red Seal Occupational Standard Reference:

5.05 Performs glass cutting and edge treatments.
12.02 Assembles residential specialty glass products and hardware. (Introduction of types)
12.03 Installs residential specialty glass, products and hardware. (Introduction of types)

Suggested Hours:

12 Hours

Theoretical Objectives:

1. Define terminology associated with glass cutting and cutting and edging.

2. Identify hazards and describe safe work practices pertaining to glass cutting and edging.
   i) chemicals and solvents
   ii) injuries

3. Identify standards and regulations pertaining to glass cutting and edging.

4. Interpret information pertaining to glass cutting and edging found on drawings and specifications.

5. Identify tools and equipment used to cut and edge glass and describe their applications.

6. Identify types of glass and glass substitutes and describe their characteristics and applications.
   i) annealed
   ii) laminated
   iii) tempered
   iv) heat-strengthened
   v) fire-resistant
   vi) Georgian-polished wire (GPW)
   vii) mirrored

viii) rolled/patterned
ix) low-E
x) leaded
xi) spandrel
xii) glass substitutes

7. Identify types of specialty glass products and describe their applications.

8. Describe the procedures used to prepare glass for cutting and edging.
   i) inspect for flaws
   ii) measure
   iii) clean

9. Identify types of chemicals and solvents used to clean glass.
   i) isopropyl
   ii) methyl hydrate

10. Describe the procedures used to perform basic cuts.
   i) measuring
   ii) scoring
   iii) running/snapping
   iv) storage and disposal of cut offs

11. Describe the procedures used to perform basic edge treatments.
   i) arris
   ii) grind and polish

Practical Objectives

1. Cut glass to a specified size.

GLZ-155 Material Handling and Storage (9 hrs)

Learning Outcomes:

- Demonstrate knowledge of glass and other materials, their characteristics and applications.
- Demonstrate knowledge of the procedures to handle and move glass and other materials.
- Demonstrate knowledge of the procedures to store glass and other materials.

Red Seal Occupational Standard Reference:

5.02 Handles glass and other materials.
5.04 Stores glass and other materials.

Suggested Hours:

9 Hours

Theoretical Objectives:

1. Define terminology associated with glass and other materials.

2. Identify hazards and describe safe work practices pertaining to the handling and storing of glass and other materials.
   i) strains
   ii) weight limits
   iii) obstacles
   iv) pinch points

3. Identify types of equipment used to move glass and other materials and describe their applications and procedures for use.

4. Identify types of product protection devices used to protect glass and other materials from elements and damage.
   i) racks
   ii) glass crates
   iii) tarps
   iv) plywood
   v) poly
   vi) cardboard
   vii) ratchet straps
   viii) rope

ix) A-frames
x) L-frames

5. Describe proper lifting and handling techniques.

6. Identify methods used to secure glass and other materials and describe their associated procedures.
   i) tying knots
   ii) banding
   iii) strapping

7. Describe the procedures used to crate and un-crate glass.

8. Describe the procedures used to store glass and other materials.
   i) onsite
   ii) shop

Practical Objectives

N/A

GLZ-160 Commercial Window Systems I (6 hrs)

Learning Outcomes:

- Demonstrate knowledge of commercial window systems, their characteristics and applications.

Red Seal Occupational Standard Reference:

5.03 Prepares materials for installation.
7.03 Fabricates window systems. (Introduction)
8.01 Lays out commercial window and door systems. (Introduction)
8.04 Installs window systems. (Introduction)

Suggested Hours:

6 Hours

Theoretical Objectives:

1. Define terminology associated with commercial window systems.

2. Identify hazards and describe safe work practices pertaining commercial window systems.

3. Interpret codes, standards and regulations pertaining to commercial window systems.
   i) National Building Code
   ii) National Energy Code of Canada for Buildings (NECB)
   iii) Canadian Standards Association (CSA)
   iv) provincial codes and regulations

4. Interpret information pertaining to commercial window systems found on drawings and specifications.

5. Identify tools and equipment used to fabricate and install commercial window systems and describe their applications and procedures for use.

6. Identify types of commercial window systems and describe their characteristics and applications.
   i) strip/ribbon
   ii) punched opening/conventional
   iii) window wall

iv) curtain wall
v) storefront
vi) total vision system

8. Identify commercial window system components and describe their purpose and applications.
   i) jambs
   ii) headers
   iii) sills
   iv) spigots
   v) screw spline
   vi) hardware
   vii) glazing
   viii) stops

9. Identify types of operable windows describe their characteristics and applications.
   i) casement
   ii) awning
   iii) hopper
   iv) tilt turn

10. Identify types of weather seal materials and fasteners used in the fabrication and installation of commercial window systems.

11. Identify types of insulation and sealants used to seal commercial window systems.

12. Describe thermal breaks.

13. Describe the procedures used to install glass stops and describe their characteristics and applications.

14. Describe methods of assembly of window systems.
   i) stick built
   ii) unitized

15. Describe the procedures used to layout and assemble commercial window systems.
   iii) strip/ribbon

Practical Objectives

N/A

GLZ-165 Storefront Systems I (30 hrs)

Learning Outcomes:

- Demonstrate knowledge of storefront systems, their characteristics and components.
- Demonstrate knowledge of procedures to fabricate a basic storefront.
- Demonstrate knowledge of procedures to install and glaze a basic storefront.

Red Seal Occupational Standard Reference:

7.02 Fabricates storefront.
8.03 Installs storefront systems.

Suggested Hours:

30 Hours

Theoretical Objectives:

1. Define terminology associated with storefront systems.

2. Identify hazards and describe safe work practices pertaining to the fabrication and installation of storefronts.

3. Interpret codes, standards and regulations pertaining to the fabrication and installation of storefronts.
   i) National Building Code (NBC)
   ii) National Energy Code of Canada for Buildings (NECB)
   iii) provincial codes and regulations

4. Interpret information pertaining to the fabrication and installation of storefronts found on drawings and specifications.

5. Identify tools and equipment used to fabricate and install storefronts and describe their applications and procedures for use.

6. Identify types of storefront systems and describe their characteristics and applications.
   i) single glaze/non-thermally
   ii) double glaze/thermally broken

7. Identify types of storefront system components and describe their purpose and applications.
    i) sills
    ii) sub-sills
    iii) rain deflectors
    iv) back-up plates
    v) stops
    vi) mullions
    vii) flashings
    viii) deflection header

8. Identify types of fasteners used to fabricate and install storefronts and describe their composition and applications.

9. Identify types of glazing gaskets and describe their characteristics and applications.
    i) vinyl
    ii) rubber
    iii) tapes

10. Identify types of storefront doors and pivot systems and describe their applications.
    i) single glazed
    ii) double glazed
    iii) glass doors
    iv) sliders
    v) access control
    vi) accessible/automatic power operator

11. Describe the procedures used to fabricate a basic storefront frame.

12. Describe assembly done in-shop and on-site.

13. Describe the procedures used to install and glaze a basic storefront frame.
    i) prepare rough opening
    ii) install membrane
    iii) install framing
    iv) install flashing
    v) glaze frame
    vi) finish frame

Practical Objectives

1. Fabricate a small frame.

2. Install and glaze a small frame.

GLZ-170 Curtain Walls I (30 hrs)

Learning Outcomes:

- Demonstrate knowledge of curtain wall systems, their components, characteristics and applications.
- Demonstrate knowledge of procedures to prepare a basic curtain wall.
- Demonstrate knowledge of procedures to glaze a basic curtain wall.
- Demonstrate knowledge of procedures to finish a basic curtain wall.

Red Seal Occupational Standard Reference:

8.02 Installs curtain wall systems.

Suggested Hours:

30 Hours

Theoretical Objectives:

1. Define terminology associated with curtain walls.

2. Identify hazards and describe safe work practices pertaining to the installation of curtain walls.

3. Interpret codes, standards and regulations pertaining to the fabrication and installation of curtain walls.
   i) National Building Code
   ii) National Energy Code of Canada for Buildings (NECB)
   iii) provincial codes and regulations

4. Interpret information pertaining to the installation of curtain walls found on drawings and specifications.

5. Identify tools and equipment used to install curtain walls and describe their applications and procedures for use.

6. Identify types of curtain wall systems and describe their characteristics and applications.
   i) stick
   ii) unitized

iii) structural silicone glazing (SSG)
- two-sided
- four-sided

iv) split mullion

7. Identify materials and fasteners used to prepare, glaze and finish curtain walls.

8. Identify sealants and adhesives used to prepare, glaze and finish curtain walls.

9. Describe the procedures used to prepare a basic curtain wall.

10. Describe the procedures used to glaze a basic curtain wall.

11. Describe the procedures used to finish a basic curtain wall.

Practical Objectives

1. Fabricate a basic curtain wall.

2. Glaze and finish a basic curtain wall.

GLZ-175 Building Envelope Membranes (12 hrs)

Learning Outcomes:

- Demonstrate knowledge of building envelope membranes, their characteristics and applications.
- Demonstrate knowledge of procedures to install building envelope membranes.

Red Seal Occupational Standard Reference:

5.06 Installs building envelope membranes.

Suggested Hours:

12 Hours

Theoretical Objectives:

1. Define terminology associated with building envelope membranes.

2. Identify hazards and describe safe work practices pertaining to building envelope membranes.

3. Identify standards and regulations pertaining to building envelope membranes.

4. Interpret information pertaining to building envelope membranes found on drawings and specifications.

5. Identify tools and equipment used to install building envelope membranes, and describe their applications.

6. Identify types of building envelope membranes and describe their purpose, characteristics, properties and applications.
   i) self-adhered
   ii) liquid-applied
   iii) ethylene propylene diene monomer (EPDM)

7. Identify types of substrates.
   i) metal
   ii) concrete
   iii) wood
   iv) fibre board

8. Describe rain screen principles.
    i) air-tight seal to exterior
    ii) rain barrier weeped to exterior
    iii) pressure equalization
    iv) pressure differential

9. Describe the procedures used to prepare the surface for building envelope membranes.
    i) clean
    ii) measure
    iii) prime
    iv) seal and lap corners

10. Identify factors to consider when installing building envelope membranes.
    i) manufacturers specifications
    ii) product compatibility
    iii) fasteners, sealants and primers
    iv) weathering
    v) adhesion
    vi) movement potential
    vii) installation sequence

11. Describe the procedures used to install building envelope membranes.

Practical Objectives

1. Install building envelope membranes.

Level 2
6 Weeks (180 hours)

GLZ-200 Glazier Trade Math II (6 hrs)

Learning Outcomes:

- Demonstrate knowledge of geometric and trigonometry calculations and formulas used in the trade.

Red Seal Occupational Standard Reference:

N/A

Suggested Hours:

6 Hours

Theoretical Objectives:

1. Perform geometric calculations.
   - i) area
   - ii) perimeter
   - iii) volume
   - iv) angles
   - v) arc
   - vi) radius
   - vii) diameter

2. Perform trigonometry calculations.

3. Solve problems using trade formulas.

Practical Objectives

1. Perform calculations to determine measurements and dimensions.

GLZ-205 Drawings and Specifications II (6 hrs)

Learning Outcomes:

- Demonstrate knowledge of procedures used to interpret and extract information from shop and fabrication drawings.
- Demonstrate knowledge of procedures to prepare simple material lists.

Red Seal Occupational Standard Reference:

3.01 Interprets plans, drawings and specifications.
4.03 Prepares list of materials and supplies.

Suggested Hours:

6 hours

Theoretical Objectives:

1. Identify sources and variables for determining material and supply requirements and availability.
   i) plans
   ii) specifications
   iii) drawings
   iv) environment

2. Interpret and extract information found on shop and fabrication drawings.
   i) glazing specifications
   ii) sizes and dimensions
   iii) flashings and fasteners

3. Describe door and window schedules and their application.
   i) metal type and finish
   ii) handing
   iii) hardware
   iv) glass type

4. Describe the procedures used to create simple material lists.
    i) quantities
        - caulking
        - vinyls
        - metal
    ii) dimensions
    iii) optimizing
    iv) glass sizes

Practical Objectives

1. Interpret shop and fabrication drawings.
2. Produce a simple material list.

GLZ-210 Flashing (12 hrs)

Learning Outcomes:

- Demonstrate knowledge of flashing, their characteristics and applications.
- Demonstrate knowledge of procedures to install flashing.

Red Seal Occupational Standard Reference:

5.07 Installs flashing.

Suggested Hours:

12 Hours

Theoretical Objectives:

1. Define terminology associated with flashing.

2. Identify hazards and describe safe work practices pertaining to flashing.

3. Identify standards and regulations pertaining to flashing.

4. Interpret information pertaining to flashing found on drawings and specifications.

5. Identify types of tools and equipment used to install flashing and describe their applications and procedures for use.

6. Describe the purpose of flashing and its use.
   i) prevention of water entry
   ii) protection for membrane
   iii) continuity of framing
   iv) finishing

7. Identify types of flashing and describe their characteristics and applications.
   i) drip
   ii) sill
   iii) parapet
   iv) jamb
   v) head
   vi) corner
   vii) column

viii) splice
ix) counter

8. Identify factors to consider when installing flashing.
   i) manufacturers specifications
   ii) product compatibility
   iii) overlap and seam requirements
   iv) expansion and contraction allowances
   v) sealant location
   vi) slope and drainage requirements
   vii) plumbing and levelling
   viii) heel beading
   ix) bedding bead
   x) fasteners and adhesive requirements

9. Describe procedures used to install flashing

Practical Objectives

1. Form and install flashing.

GLZ-215 Commercial Entrance Systems I (6 hrs)

Learning Outcomes:

- Demonstrate knowledge of commercial entrance systems, their characteristics and applications.

Red Seal Occupational Standard Reference:

7.05 Fabricates commercial entrance systems. (Introduction to types)

Suggested Hours:

6 Hours

Theoretical Objectives:

1. Define terminology associated with commercial entrance systems.

2. Identify hazards and describe safe work practices pertaining to the fabrication of commercial entrance systems.

3. Interpret codes, standards and regulations pertaining to the fabrication of commercial entrance systems.
   i) National Building Code
   ii) National Energy Code of Canada for Buildings (NECB)
   iii) Canadian Standards Association
   iv) provincial codes and regulations

4. Interpret information pertaining to the fabrication of commercial entrance systems found on drawings and specifications.

5. Identify tools and equipment used to fabricate commercial entrance systems and describe their applications and procedures for use.

6. Identify types of commercial entrance systems and describe their characteristics and applications.
   i) swing
      - single
      - double
   ii) sliding

iii) portals
iv) vestibule
v) revolving

7. Identify types of commercial entrance system components and describe their purpose and characteristics.
   i) handles
   ii) closers
   iii) thresholds
   iv) flush bolts
   v) locksets

8. Identify types of framing materials and describe their characteristics and applications.

9. Describe factors to consider when fabricating commercial entrance systems.
   i) manufacturers specifications
   ii) product compatibility
   iii) hardware templates
   iv) expansion and contraction
   v) assembly sequence

Practical Objectives

N/A

GLZ-220 Commercial Window Systems II (30 hrs)

Learning Outcomes:

- Demonstrate knowledge of procedures to fabricate strip/ribbon windows.
- Demonstrate knowledge of procedures to install strip/ribbon windows.
- Demonstrate knowledge of procedures to glaze strip/ribbon windows.

Red Seal Occupational Standard Reference:

5.03 Prepares materials for installation.
7.03 Fabricates window systems.
8.01 Lays out commercial window and door systems.
8.04 Installs window systems.

Suggested Hours:

30 Hours

Theoretical Objectives:

1. Define terminology associated with strip/ribbon windows.

2. Identify hazards and describe safe work practices pertaining to the fabrication and installation of strip/ribbon windows.

3. Interpret codes, standards and regulations pertaining to the fabrication and installation of strip/ribbon windows.
   i) National Building Code
   ii) National Energy Code of Canada for Buildings (NECB)
   iii) Canadian Standards Association
   iv) provincial codes and regulations

4. Interpret information pertaining to the fabrication and installation of strip/ribbon windows found on drawings and specifications.

5. Identify tools and equipment used to fabricate and install strip/ribbon windows and describe their applications and procedures for use.

6. Identify types of strip/ribbon windows and describe their characteristics and applications.

7. Identify components of strip/ribbon windows and describe their purpose and characteristics.
   i) spigots
   ii) screw spline
   iii) hardware
   iv) glazing

8. Identify types of materials and fasteners used in the fabrication and installation of strip/ribbon windows.

9. Identify methods used to detect defects in materials.

10. Identify types of insulation and sealants used to seal strip/ribbon windows.

11. Identify factors to consider when fabricating and installing strip/ribbon windows.
   ii. manufacturers specifications
   iii. product compatibility
   iv. weathering
   v. expansion and contraction
   vi. installation sequence

12. Describe the procedures used to lay out strip/ribbon windows.
   i) measure window system
   ii) verify fit with opening
   iii) determine reference points, gridlines and benchmarks

13. Describe the procedures used to fabricate strip/ribbon windows.

14. Describe the procedures used to install strip/ribbon windows.
   i) plumb, level and square window and frame
   ii) secure window
   iii) verify operation of window
   iv) insulate and seal frame

15. Describe the procedures used to glaze strip/ribbon windows.
   i) inspect glass and components
   ii) apply setting block
   iii) secure glazing

Practical Objectives

1. Fabricate a strip window assembly.

2. Assemble and glaze a window frame.

GLZ-225 Glass Cutting and Edging II (9 hrs)

Learning Outcomes:

- Demonstrate knowledge of sealed units and their applications.
- Demonstrate knowledge of procedures to cut glass.
- Demonstrate knowledge of procedures used to perform edge treatments.

Red Seal Occupational Standard Reference:

5.05 Performs glass cutting and edge treatments.

Suggested Hours:

9 Hours

Theoretical Objectives:

1. Define terminology associated with glass cutting and edging.

2. Identify hazards and describe safe work practices pertaining to glass cutting and edging.

3. Identify standards and regulations pertaining to glass cutting and edging.

4. Interpret information pertaining to glass cutting and edging found on drawings and specifications.

5. Identify tools and equipment used to cut and edge glass and describe their applications.

6. Identify limitations of working with glass.
   i) where to drill holes
   ii) sanding depth
   iii) keeping glass cool

7. Describe sealed units and describe their characteristics and applications.
   i) low-E coatings
   ii) high-performance
   iii) spacer bars/desiccants
   iv) laminated
   v) triple and quad glazed
   vi) gases

vii) breather tubes
viii) heat mirror

8. Describe edging techniques.
   i) arris
   ii) bevel
   iii) flat polish
   iv) ogee
   v) pencil
   vi) bullnose

9. Describe the procedures used to cut glass.
   i) annealed
   ii) laminate
   iii) wired
   iv) mirrored
   v) obscure patterned
   vi) specialty

10. Describe the procedures used to perform edge treatments.
   i) arris
   ii) grind
   iii) polish

Practical Objectives

1. Perform a basic edge treatment.

GLZ-230 Storefront Systems II (24 hrs)

Learning Outcomes:

- Demonstrate knowledge of storefront entrance systems, their components and applications.
- Demonstrate knowledge of procedures to fabricate and install doors and sidelights for storefront systems.
- Demonstrate knowledge of procedures to install doors and glazing for storefront systems.

Red Seal Occupational Standard Reference:

5.03 Prepares materials for installation.
7.02 Fabricates storefront systems.
7.05 Fabricates commercial entrance systems.
8.01 Lays out commercial window and door systems.
8.03 Installs storefront systems.
8.06 Installs commercial entrance systems.

Suggested Hours:

24 Hours

Theoretical Objectives:

1. Define terminology associated with storefront entrance systems.

2. Identify hazards and describe safe work practices pertaining to the fabrication and installation of storefront entrance systems.

3. Interpret codes, standards and regulations pertaining to the fabrication and installation of storefront entrance systems.
   i) National Building Code (NBC)
   ii) National Energy Code of Canada for Buildings (NECB)
   iii) provincial codes and regulations

4. Interpret information pertaining to the fabrication and installation of storefront entrances found on drawings and specifications.

5. Identify tools and equipment used to fabricate and install storefront entrance systems and describe their applications and procedures for use.

6. Identify types of storefront entrance systems and describe their characteristics and applications.
   i) swing
   ii) bifold
   iii) revolving
   iv) sliding
   v) portals
   vi) vestibule
   vii) total vision system

7. Identify types of storefront entrance system components and describe their purpose and operation.
   i) handles
   ii) closers
   iii) thresholds
   iv) flush bolts
   v) locks
   vi) electric strikes
   vii) panic hardware (exit devices)
   viii) pivots
   ix) hinges
   x) restrictors

8. Identify materials and fasteners used in the fabrication and installation of storefront entrance systems.

9. Identify methods used to detect defects in materials.

10. Identify types of storefront entrance hardware and describe their characteristics and applications.

11. Describe the procedures used to fabricate and prepare door and sidelights for installation.
   i) fabricate door frame and sidelights
   ii) prepare frame for closers, hinges and hardware
   iii) perform routering and lock cut-outs
   iv) fabricate jigs
   v) fabricate headers for concealed overhead closers
   vi) install panic hardware

12. Describe assembly performed in-shop and on-site.

13. Describe the procedures used to install door and sidelights.
    i) install flashing
    ii) glaze door
    iii) install hardware
    iv) plumb, level and square frame
    v) load door
    vi) perform adjustments
    vii) install locks

14. Describe the procedures used to install glazing to sidelights.
    i) install setting blocks
    ii) perform glazing
    iii) install glass stops and gaskets

15. Describe the procedures used to finish frames.
    i) install backing rods
    ii) install insulation
    iii) apply sealants

Practical Objectives:

1. Fabricate a doorframe and sidelight.
2. Install a door and sidelight.

GLZ-235 Curtain Walls II (24 hrs)

Learning Outcomes:

- Demonstrate knowledge of procedures to fabricate curtain walls.
- Demonstrate knowledge of procedures to install curtain walls.
- Demonstrate knowledge of procedures to glaze curtain walls.

Red Seal Occupational Standard Reference:

7.01 Fabricates curtain walls.
8.02 Installs curtain wall systems.

Suggested Hours:

24 Hours

Theoretical Objectives:

1. Define terminology associated with curtain walls.

2. Identify hazards and describe safe work practices pertaining to the fabrication and installation of curtain walls.

3. Interpret codes, standards and regulations pertaining to the fabrication and installation of curtain walls.
   i) National Building Code
   ii) National Energy Code of Canada for Buildings (NECB)
   iii) provincial codes and regulations

4. Interpret information pertaining to the fabrication and installation of curtain walls found on drawings and specifications.

5. Identify tools and equipment used to fabricate and install curtain walls and describe their applications and procedures for use.

6. Identify types of curtain wall systems and describe their characteristics and applications.
   i) stick
   ii) unitized
   iii) structural silicone glazing (SSG)
      - two-sided

- four-sided

iv) split mullion

7. Identify types of curtain wall components and describe their purpose and applications.
   i) spigots
   ii) stops
   iii) mullions
   iv) muntins
   v) glass
   vi) rubbers
   vii) pressure plates
   viii) caps
   ix) anchors
   x) blocks

8. Identify types of operable windows and describe their characteristics and applications.
   i) casement
   ii) awning
   iii) hopper

9. Identify materials and fasteners used in the fabrication and installation of curtain walls.
   i) hardware
   ii) tapes
   iii) sealants and adhesives
   iv) gaskets

10. Identify factors to consider when fabricating and installing curtain walls.
   i) manufacturers specifications
   ii) product compatibility
   iii) weathering
   iv) expansion and contraction
   v) installation sequence

11. Describe the procedures used to prepare for fabricating and installing curtain walls.

12. Describe the procedures used to fabricate curtain walls.

13. Describe the procedures used to install curtain walls.

14. Describe the procedures used to glaze curtain walls.

Practical Objectives

1. Fabricate a curtain wall with an entrance.
2. Install and glaze a curtain wall.

GLZ-240 Residential Window Systems (3 hrs)

Learning Outcomes:

- Demonstrate knowledge of residential window systems, their characteristics and applications.
- Demonstrate knowledge of procedures to install residential window systems.
- Demonstrate knowledge of procedures to glaze residential window systems.

Red Seal Occupational Standard Reference:

5.03 Prepares materials for installation.
9.01 Lays out residential window systems.
9.02 Sets windows in openings.
9.03 Glazes windows.

Suggested Hours:

3 Hours

Theoretical Objectives:

1. Define terminology associated with residential window systems.

2. Identify hazards and describe safe work practices pertaining to the installation of residential window systems.

3. Interpret codes, standards and regulations pertaining to the installation of residential window systems.
   i) National Building Code
   ii) National Energy Code of Canada for Buildings (NECB)
   iii) Canadian Standards Association
   iv) provincial codes and regulations

4. Interpret information pertaining to the installation of residential window systems found on drawings and specifications.

5. Identify tools and equipment used to install residential window systems and describe their applications and procedures for use.

6. Identify types of residential window systems and describe their characteristics and applications.
    i) bays
    ii) bows
    iii) inserts
    iv) awning
    v) casement
    vi) sliding
    vii) tilt turn
    viii) fixed
    ix) skylights

7. Identify types of residential window system components and describe their purpose and characteristics.

8. Identify types of windows and describe their characteristics and applications.
    i) operable
        - hopper
        - single-hung
        - double-hung
        - guillotine
    ii) fixed

9. Identify types of materials and fasteners used in the installation of residential window systems.

10. Identify methods used to detect defects in materials.

11. Identify types of insulation and sealants used to seal residential window systems.

12. Identify factors to consider when installing residential window systems.
    i) manufacturers specifications
    ii) product compatibility
    iii) weathering
    iv) expansion and contraction
    v) installation sequence

13. Describe the procedures used to lay out residential window systems.
    i) measure window system
    ii) verify fit with opening

14. Describe the procedures used to install residential window systems.
    i) plumb, level and square window and frame
    ii) secure window

iii) verify operation of window
iv) insulate and seal frame

15. Describe the procedures used to glaze residential window systems.
i) inspect glass and components
ii) apply setting block
iii) secure glazing

Practical Objectives

N/A

GLZ-245 Residential Door Systems (3 hrs)

Learning Outcomes:

- Demonstrate knowledge of residential door systems, their characteristics and applications.
- Demonstrate knowledge of procedures to install residential door systems.
- Demonstrate knowledge of procedures to glaze residential door systems.

Red Seal Occupational Standard Reference:

5.03 Prepares materials for installation.
10.01 Lays out residential door systems.
10.02 Assembles residential door frames.
10.03 Sets residential doors and frames.
10.04 Installs residential door hardware.
10.05 Glazes residential doors.

Suggested Hours:

3 Hours

Theoretical Objectives:

1. Define terminology associated with residential door systems.

2. Identify hazards and describe safe work practices pertaining to the installation of residential door systems.

3. Interpret codes, standards and regulations pertaining to the installation of residential door systems.
   i) National Building Code
   ii) National Energy Code of Canada for Buildings (NECB)
   iii) Canadian Standards Association (CSA)
   iv) provincial codes and regulations

4. Interpret information pertaining to the installation of residential door systems found on drawings and specifications.

5. Identify tools and equipment used to install residential door systems and describe their applications and procedures for use.

6. Identify types of residential door systems and describe their characteristics and applications.
    i) french
    ii) double
    iii) swing
    iv) sliding

7. Identify types of residential door systems components and describe their purpose and characteristics.

8. Identify types of residential door frames and describe their characteristics and applications.
    i) vinyl/polyvinyl chloride (PVC)
    ii) metal composite
    iii) fibreglass
    iv) wood

9. Identify types of materials and fasteners used in the installation of residential door systems.

10. Identify methods used to detect defects in materials.

11. Identify types of insulation and sealants used to seal residential door systems.

12. Identify air and vapour barriers and describe their characteristics and applications.

13. Identify types of residential door hardware and describe their characteristics and applications.
    i) strike plates
    ii) hinges
    iii) locksets
    iv) pivots
    v) handles
    vi) rollers

14. Identify factors to consider when installing residential door systems.
    i) manufacturers specifications
    ii) product compatibility
    iii) weathering
    iv) expansion and contraction
    v) installation sequence

15. Describe the procedures used to assemble residential door frames systems.
    i) lay out door frames

ii) fasten and secure door frame components

16. Describe the procedures used to install residential doors and frames.
    i) plumb, level and square door and frame
    ii) fasten door and frame
    iii) verify operation of door
    iv) insulate and seal frame

17. Describe the procedures used to install residential door hardware.

18. Describe the procedures used to glaze residential doors.
    i) inspect glass and components
    ii) apply setting blocks
    iii) secure glazing

Practical Objectives

N/A

GLZ-250 Residential Window and Door Service (3 hrs)

Learning Outcomes:

- Demonstrate knowledge of procedures to repair residential window and door systems.

Red Seal Occupational Standard Reference:

14.01 Assesses service requirements for residential window and door systems.
14.02 Repairs residential window and door systems.

Suggested Hours:

3 Hours

Theoretical Objectives:

1. Define terminology associated with repairing residential window and door systems.

2. Identify hazards and describe safe work practices pertaining to the repair of residential window and door systems.

3. Interpret codes, standards and regulations pertaining to the repair of residential window and door systems.
   i) National Building Code
   ii) National Energy Code of Canada for Buildings (NECB)
   iii) Canadian Standards Association
   iv) provincial codes and regulations

4. Interpret information pertaining to the repair of residential window and door systems found on drawings and specifications.

5. Identify tools and equipment used to repair residential window and door systems and describe their applications and procedures for use.

6. Identify factors to consider when repairing residential window and door systems.
   i) manufacturers specifications
   ii) product compatibility
   iii) weathering
   iv) expansion and contraction

v) installation sequence

7. Describe the procedures used to determine required upgrades and retrofits.
   i) building envelope
   ii) insulating values
   iii) energy efficiency
   iv) safety

8. Describe the procedures used to assess and repair residential window systems.
   i) replace broken and failed glass
   ii) repair seals and sashes
   iii) replace hardware
   iv) service or replace locks
   v) replace damaged components and framing
   vi) remove hazardous materials

9. Describe the procedures used to assess and repair residential door systems.
   i) replace broken and failed glass
   ii) service doors and vents
   iii) replace hardware
   iv) service or replace locks
   v) replace damaged components and framing
   vi) remove hazardous materials

Practical Objectives

N/A

GLZ-255 Mirrors and Back-Painted Glass (18 hrs)

Learning Outcomes:

- Demonstrate knowledge of mirrors and back-painted glass, their characteristics and applications.
- Demonstrate knowledge of procedures to install mirrors and back-painted glass.

Red Seal Occupational Standard Reference:

5.03 Prepares materials for installation.
12.01 Lays out residential specialty glass and products.
12.02 Assembles residential specialty glass, products and hardware.
12.03 Installs residential specialty glass, products and hardware.

Suggested Hours:

18 Hours

Theoretical Objectives:

1. Define terminology associated with mirrors and back-painted glass.

2. Identify hazards and describe safe work practices pertaining to the installation of mirrors and back-painted glass.

3. Interpret codes, standards and regulations pertaining to the installation of mirrors and back-painted glass.
   i) National Building Code
   ii) National Energy Code of Canada for Buildings (NECB)
   iii) National Fire Code of Canada
   iv) Canadian Standards Association (CSA)
   v) provincial codes and regulations

4. Interpret information pertaining to the installation of mirrors and back-painted glass found on drawings and specifications.

5. Identify tools and equipment used to install mirrors and back-painted glass and describe their applications and procedures for use.

6. Identify types of mirrors and back-painted glass and describe their characteristics and applications.

7. Identify types of anchoring systems used in the installation of mirrors and back-painted glass.
   i) nuts and bolts
   ii) screws
   iii) quick anchors

8. Identify types of materials and fasteners and describe their characteristics and applications.
   i) hardware
   ii) tapes
   iii) sealants and adhesives
   iv) gaskets

9. Identify methods used to detect defects in materials.

10. Identify factors to consider when installing mirrors and back-painted glass.
    i) manufacturers specifications
    ii) product compatibility
    iii) adhesion
    iv) clearance tolerances
    v) wall plane
    vi) installation sequence

10. Describe pre-assembly done in shop.

11. Describe the procedures used to prepare walls for mirrors and back-painted glass.

12. Describe the procedures used to layout, assemble and install mirrors and back-painted glass.
    i) remove existing product
    ii) fasten product to opening
    iii) plumb, level and square product
    iv) install hardware
    v) install anchoring system
    vi) cut and fit materials
    vii) clad and flash materials
    viii) install gaskets
    ix) apply sealants and adhesives
    x) apply final finishes
    xi) verify operation of product

Practical Objective

1. Measure and lay out a mirror wall.
2. Cut and edge treat mirrors.
3. Install a mirror to specifications.

GLZ-260 Guardrails, Handrails and Balustrades (18 hrs)

Learning Outcomes:

- Demonstrate knowledge of guardrails, handrails and balustrades, their characteristics and applications.
- Demonstrate knowledge of procedures to fabricate guardrails, handrails and balustrades.
- Demonstrate knowledge of procedures to install guardrails, handrails and balustrades.

Red Seal Occupational Standard Reference:

5.03 Prepares materials for installation.
11.01 Lays out commercial specialty glass and products.
11.02 Assembles commercial specialty glass, products and hardware.
11.03 Installs commercial specialty glass, products and hardware.
12.01 Lays out residential specialty glass and products.
12.02 Assembles residential specialty glass, products and hardware.
12.03 Installs residential specialty glass, products and hardware.

Suggested Hours:

18 Hours

Theoretical Objectives:

1. Define terminology associated with guardrails, handrails and balustrades.

2. Identify hazards and describe safe work practices pertaining to the installation of guardrails, handrails and balustrades.

3. Interpret codes, standards and regulations pertaining to the installation of guardrails, handrails and balustrades.
   i) National Building Code
   ii) National Energy Code of Canada for Buildings (NECB)
   iii) Canadian Standards Association (CSA)
   iv) provincial codes and regulations

4. Interpret information pertaining to the installation of guardrails, handrails and balustrades found on drawings and specifications.

5. Identify tools and equipment used to install guardrails, handrails and balustrades and describe their applications and procedures for use.

6. Identify types of guardrails, handrails and balustrades and describe their characteristics and applications.
   i) channel/base shoe
   ii) stanchions
   iii) face mount
   iv) glass support systems

7. Identify types of anchoring systems used in the installation of guardrails, handrails and balustrades.
   i) wedge anchors
   ii) nuts and bolts
   iii) screws
   iv) quick anchors
   v) chemical anchors

8. Identify types of materials and fasteners and describe their characteristics and applications.
   i) hardware
   ii) tapes
   iii) sealants and adhesives
   iv) gaskets
   v) cladding

9. Identify methods used to detect defects in materials.

10. Identify factors to consider when fabricating and installing guardrails, handrails and balustrades.
   i) manufacturers specifications
   ii) product compatibility
   iii) installation sequence

11. Describe the procedures used to fabricate guardrails, handrails and balustrades.

12. Describe pre-assembly done in shop.

13. Describe the procedures used to install guardrails, handrails and balustrades.
   i) remove existing product
   ii) fasten product to opening
   iii) plumb, level and square product
   iv) install hardware
   v) install anchoring system

vi) cut and fit materials
vii) clad and flash materials
viii) install gaskets
ix) apply sealants and adhesives
x) apply final finishes
xi) verify operation of product

13. Describe the procedures used to assess and repair guardrails, handrails and balustrades.

Practical Objectives

1. Install a basic handrail.

GLZ-265 Specialty Glass and Products I (18 hrs)

Learning Outcomes:

- Demonstrate knowledge of residential specialty glass, products and hardware, their characteristics and applications.

Red Seal Occupational Standard Reference:

12.01 Lays out residential specialty glass and products. (Types and applications)

Suggested Hours:

18 Hours

Theoretical Objectives:

1. Define terminology associated with residential specialty glass and products.

2. Identify hazards and describe safe work practices pertaining to residential specialty glass and products.

3. Interpret codes, standards and regulations pertaining to residential specialty glass and products.
   i) National Building Code
   ii) National Energy Code of Canada for Buildings (NECB)
   iii) National Fire Code of Canada (NFC)
   iv) Canadian Standards Association (CSA)
   v) provincial codes and regulations

4. Interpret information pertaining to residential specialty glass and products found on drawings and specifications.

5. Identify tools and equipment used to install residential specialty glass and products and describe their applications and procedures for use.

6. Identify types of residential specialty glass and describe their characteristics, properties and applications.
   i) curved
   ii) multi-coloured

iii) multi-laminate
iv) electrochromic
v) photovoltaic
vi) textured
vii) mirrored
viii) tempered

7. Identify types of residential specialty glass products and describe their characteristics and applications.
   i) shower enclosures
   ii) point glazing systems
   iii) sun shades
   iv) glass handrails/balustrades
   v) mirrors
   vi) shelving
   vii) glass floors
   viii) display cases
   ix) smoke baffles
   x) frameless
   xi) pass-through windows
   xii) solariums
   xiii) skylights

8. Identify types of residential specialty product materials and describe their characteristics and applications.
   i) aluminum
   ii) stainless steel
   iii) plastic
   iv) wood
   v) vinyl/PVC

9. Identify types of residential anchoring systems and describe their characteristics and applications.
   i) wedge anchors
   ii) nuts and bolts
   iii) screws
   iv) quick anchors
   v) chemical anchors

10. Identify types of residential hardware and patch fittings and describe their characteristics and applications.
   i) clamps
   ii) hinges
   iii) stand-offs

iv) point glazing
v) rail systems
vi) wedge systems
vii) closers
viii) pivots
ix) handles
x) U-channels

Practical objectives

N/A

Level 3
6 Weeks (180 hours)

MENT-701 MENTORING II

Learning Outcomes:

- Demonstrate knowledge of effective communication practices as a mentor.
- Demonstrate knowledge of strategies for teaching workplace skills.

Red Seal Occupational Standard Reference:

A-6.01 Uses communication techniques
A-6.02 Uses mentoring techniques

Suggested Hours:

6 hours

Theoretical Objectives:

1. Identify the different roles played by a workplace mentor.

2. Identify strategies to create a supportive learning environment.

3. Identify techniques for effective communication as a mentor.
   i) constructive feedback
   ii) active listening
   iii) leading meetings and one-on-one sessions

4. Describe the steps in teaching a skill.
   i) identifying the point of lesson
   ii) linking the lesson
   iii) demonstrating the skill
   iv) providing practice
   v) giving feedback
   vi) assessing skill and progress

5. Identify strategies to assist in teaching a skill while meeting individual learning needs.
   i) principles of instruction
   ii) coaching skills

6. Explain how to adjust a lesson for various situations.

Practical Objectives:
N/A

GLZ-300 Advanced Layout and Measuring Equipment (12 hrs)

Learning Outcomes:

- Demonstrate knowledge of advanced layout and measuring equipment, their applications and procedures for use.
- Demonstrate knowledge of the procedures used to perform advanced layout and measuring operations.

Red Seal Occupational Standard Reference:

2.03 Uses layout and measuring equipment.

Suggested Hours:

12 Hours

Theoretical Objectives:

1. Define terminology associated with advanced layout and measuring equipment.

2. Identify hazards and describe safe work practices pertaining to advanced layout and measuring operations.

3. Interpret information pertaining to advanced layout and measuring found on drawings and specifications.

4. Identify types of advanced layout and measuring equipment and describe their applications and procedures for use.
   i) total station and data collectors
   ii) 3D scanners
   iii) laser and level equipment

5. Describe the procedures used to set up equipment.

6. Describe the procedures used to measure material, equipment and components.
   i) inside measurements
   ii) outside measures

7. Describe the procedures used to perform layout and measuring operations.
   i) differential levelling
   ii) layout of angles
   iii) gridlines and benchmarks

8. Describe the procedures used to transpose rough openings, frame sizes and flashing to drawings.

9. Perform geometry and trigonometry calculations.

Practical Objectives

N/A

GLZ-305 Drawings and Specifications III (6 hrs)

Learning Outcomes:

- Demonstrate knowledge of procedures used to interpret and extract information from architectural drawings and specifications.
- Demonstrate knowledge of procedures used to prepare complex material lists.
- Demonstrate knowledge of basic sketching techniques.

Red Seal Occupational Standard Reference:

3.01 Interprets plans, drawings and specifications.
4.03 Prepares list of materials and supplies.

Suggested Hours:

6 hours

Theoretical Objectives:

1. Interpret information found on architectural drawings and specifications to confirm shop and fabrication drawings.
   - i) glazing specifications
   - ii) rough sizes and dimensions

2. Interpret and extract information found on door and window schedules.
   - i) metal type and finish
   - ii) handing
   - iii) hardware
   - iv) glass type

3. Describe the procedures used to prepare complex material lists.
   - i) quantities
     - caulking
     - vinyls
     - metal
   - ii) dimensions
   - iii) optimizing
   - iv) glass sizes

4. Describe the procedures used to prepare basic shop drawings.

Practical Objectives

1. Produce a material list.

2. Produce a basic shop drawing.

GLZ-310 Rigging, Hoisting and Lifting Equipment II (6 hrs)

Learning Outcomes:

- Demonstrate knowledge of procedures to rig material and equipment.
- Demonstrate knowledge of procedures to perform a basic lift.

Red Seal Occupational Standard Reference:

3.01 Uses rigging equipment
3.02 Uses hoisting and lifting equipment

Suggested Hours:

6 Hours

Theoretical Objectives:

1. Identify hazards and describe safe work practices pertaining to the use of rigging, hoisting and lifting equipment.
   i) overhead/powerlines
   ii) excessive loads
   iii) center of gravity
   iv) equipment damage

2. Interpret standards and regulations pertaining to rigging, hoisting and lifting equipment.

3. Identify types of rigging, hoisting and lifting equipment and describe their applications, limitations and procedures for use.
   i) cranes
   ii) manipulators
   iii) lift trucks
   iv) hoists
   v) power cups

4. Identify types of knots, hitches and bends and describe their applications and associated procedures.
   i) half hitch
   ii) clove hitch
   iii) bowline
   iv) figure-eight

5. Identify factors to consider when selecting rigging, hoisting and lifting equipment

6. Identify factors to consider when rigging a load for hoisting and lifting.
   i) load characteristics
   ii) equipment and accessories
   iii) environment
   iv) centre of gravity
   v) attachment locations
   vi) sling angles
   vii) machine capacity/load ratings
   viii) floor, roof slabs and loading ramps capacity

7. Perform calculations pertaining to rigging, hoisting and lifting operations.
   i) working load limit
   ii) breaking strength
   iii) sling tension and sling angle

8. Describe the procedures used to rig and secure a load (materials and equipment) for hoisting and lifting.

9. Describe the procedures to secure the lift area.
   i) ensuring supervision of lift
   ii) installing barriers
   iii) assessing ground conditions
   iv) ensuring work area is not congested or obstructed
   v) limiting approach

10. Describe the procedures used to perform a basic lift.

11. Describe the procedures used to inspect, maintain and store rigging, hoisting and lifting equipment.

Practical Objectives

1. Tie knots.
2. Perform standard hand signals.

GLZ-315 Commercial Entrance Systems II (12 hrs)

Learning Outcomes:

- Demonstrate knowledge of commercial entrance systems, their characteristics and applications.
- Demonstrate knowledge of procedures to fabricate commercial entrance systems.
- Demonstrate knowledge of procedures to install commercial entrance systems.

Red Seal Occupational Standard Reference:

7.05 Fabricates commercial entrance systems.
8.01 Lays out commercial window and door systems.
8.06 Installs commercial entrance systems.

Suggested Hours:

12 Hours

Theoretical Objectives:

1. Define terminology associated with commercial entrance systems.

2. Identify hazards and describe safe work practices pertaining to the fabrication and installation of commercial entrance systems.

3. Interpret codes, standards and regulations pertaining to the fabrication and installation of commercial entrance systems.
   i) National Building Code
   ii) National Energy Code of Canada for Buildings (NECB)
   iii) Canadian Standards Association
   iv) provincial codes and regulations

4. Interpret information pertaining to the fabrication and installation of commercial entrance systems found on drawings and specifications.

5. Identify tools and equipment used to fabricate and install commercial entrance systems and describe their applications and procedures for use.

6. Identify types of commercial entrance systems and describe their characteristics and applications.
   i) swing
   ii) bifold
   iii) revolving
   iv) sliding
   v) portals
   vi) vestibule
   vii) total vision system

7. Identify types of commercial entrance system components and describe their purpose and characteristics.
   i) handles
   ii) closers
   iii) thresholds
   iv) flush bolts
   v) locksets
   vi) electric strikes
   vii) panic hardware
   viii) pivots
   ix) hinges
   x) restrictors

8. Identify types of automatic operators and describe their characteristics and applications.
   i) mag locks
   ii) handicap panels
   iii) card readers
   iv) key pad operators
   v) automatic mats
   vi) auto sensors

9. Identify factors to consider when installing commercial entrance systems.
   i) manufacturers specifications
   ii) product compatibility
   iii) weathering
   iv) expansion and contraction
   v) installation sequence

10. Describe the procedures used to fabricate commercial entrance systems.

11. Describe pre-assembly done in shop.

12. Describe the procedures used to lay out commercial entrance systems.
   i) measure entrance system

ii) verify fit with opening
iii) determine reference points, gridlines and benchmarks

13. Describe the procedures used to install commercial entrance systems.
i) plumb, level and square door and frame
ii) secure door
iii) verify operation of door
iv) insulate and seal frame

Practical Objectives

N/A

GLZ-320 Curtain Walls III (6 hrs)

Learning Outcomes:

- Demonstrate knowledge of classifications of curtain wall systems, their characteristics and applications.
- Demonstrate knowledge of advanced fabrication and installation processes.

Red Seal Occupational Standard Reference:

7.01 Fabricates curtain walls.
8.02 Installs curtain wall systems.

Suggested Hours:

6 Hours

Theoretical Objectives:

1. Define terminology associated with curtain walls.

2. Identify hazards and describe safe work practices pertaining to curtain walls.

3. Interpret codes, standards and regulations pertaining to curtain walls.
   i) National Building Code
   ii) National Energy Code of Canada for Buildings (NECB)
   iii) Canadian Standards Association (CSA)
   iv) provincial codes and regulations

4. Interpret information pertaining to the fabrication and installation of curtain walls found on drawings and specifications.

5. Identify tools and equipment used to fabricate and install curtain walls and describe their applications and procedures for use.

6. Identify classifications of curtain wall systems and describe their characteristics and applications.
   i) barrier systems
   ii) drainage systems
   iii) rain screen/pressure-equalized systems
   iv) green curtain wall

7. Identify types of curtain wall components and describe their purpose and applications.
    i) pressure plates
    ii) mullions
    iii) slip brackets
    iv) static and non-static anchors
    v) beauty caps

3. Identify types of anchor systems and describe their characteristics and applications.
    i) aluminum angles
    ii) slip brackets
    iii) static anchors/deadload
    iv) dynamic anchors/windload
    v) embeds

4. Describe rain screen principles.
    i) watershed
    ii) pressure equalized chamber
    iii) air seal

5. Describe advanced curtain wall fabrication processes.

6. Describe advanced curtain wall installation processes.
    i) starter track and welder anchors
    ii) level, plumb and align frames
    iii) blue skin
    iv) glazing adapters
    v) bulb vinyl for ventilation escape

Practical Objectives

N/A

GLZ-325 Commercial Window and Door Service (9 hrs)

Learning Outcomes:

- Demonstrate knowledge of procedures to repair commercial window and door systems.

Red Seal Occupational Standard Reference:

13.01 Assesses service requirements for commercial window and door systems.
13.02 Repairs commercial window and door systems.

Suggested Hours:

9 Hours

Theoretical Objectives:

1. Define terminology associated with repairing commercial window and door systems.

2. Identify hazards and describe safe work practices pertaining to the repair of commercial window and door systems.

3. Interpret codes, standards and regulations pertaining to the repair of commercial window and door systems.
   i) National Building Code
   ii) National Energy Code of Canada for Buildings (NECB)
   iii) Canadian Standards Association
   iv) provincial codes and regulations

4. Interpret information pertaining to the repair of commercial window and door systems found on drawings and specifications.

5. Identify tools and equipment used to repair commercial window and door systems and describe their applications and procedures for use.

6. Identify factors to consider when repairing commercial window and door systems.
   i) manufacturers specifications
   ii) product compatibility
   iii) weathering
   iv) expansion and contraction

v) installation sequence

7. Describe the procedures used to determine required upgrades and retrofits.
   i) building envelope
   ii) insulating values
   iii) energy efficiency
   iv) safety

8. Describe the procedures used to assess and repair commercial window and door systems.
   i) replace broken and failed glass
   ii) repair seals and sashes
   iii) replace hardware
   iv) service or replace locks
   v) replace damaged components

Practical Objectives

N/A

GLZ-330 Glass Cutting and Edging III (15 hrs)

Learning Outcomes:

- Demonstrate knowledge of cutting and edging glass shapes.

Red Seal Occupational Standard Reference:

5.05 Performs glass cutting and edge treatments.

Suggested Hours:

15 Hours

Theoretical Objectives:

1. Define terminology associated with cutting and edging glass shapes.

2. Identify hazards and describe safe work practices pertaining to cutting and edging glass shapes.

3. Identify standards and regulations pertaining to cutting and edging glass shapes.

4. Interpret information pertaining to cutting and edging glass shapes found on drawings and specifications.

5. Identify tools and equipment used to cut and edge glass shapes and describe their applications.
   i) polishing and edging
   ii) scratch removal
   iii) sandblasting

6. Identify types of glass shapes and describe their characteristics and applications.
   i) mail slot
   ii) speak hole
   iii) holes (2 in., 4 in.)
      - plug outlets
      - light fixtures
      - mounting hardware
      - plumbing fixtures
   iv) arcs

v) templates
vi) notches
vii) island (for large plug outlets)
viii) circles

7. Describe polishing techniques.

8. Describe the procedures used to cut and edge glass shapes.

Practical Objectives

1. Cut glass shapes.

GLZ-335 Specialty Glass and Products II (27 hrs)

Learning Outcomes:

- Demonstrate knowledge of commercial specialty glass, products and hardware, their characteristics and applications.
- Demonstrate knowledge of procedures install wall partitions/dividers.
- Demonstrate knowledge of procedures to install spider glazing.
- Demonstrate knowledge of procedures to install smoke baffles.
- Demonstrate knowledge of procedures to install canopies
- Demonstrate knowledge of procedures to install sunshades.
- Demonstrate knowledge of procedures to install frameless heavy glass systems.
- Demonstrate knowledge of procedures to repair specialty glass products.

Red Seal Occupational Standard Reference:

5.03 Prepares materials for installation.
11.01 Lays out commercial specialty glass and products.
11.02 Assembles commercial specialty glass, products and hardware.
11.03 Installs commercial specialty glass, products and hardware.
12.01 Lays out residential specialty glass and products.
12.02 Assembles residential specialty glass, products and hardware.
12.03 Installs residential specialty glass, products and hardware.
15.01 Assesses service requirements for specialty glass and products.
15.02 Repairs specialty glass and products.

Suggested Hours:

27 Hours

Theoretical Objectives:

1. Define terminology associated with commercial specialty glass products.

2. Identify hazards and describe safe work practices pertaining to commercial specialty glass products.

3. Interpret codes, standards and regulations pertaining to the installation of specialty glass products.

i) National Building Code
ii) National Energy Code of Canada for Buildings (NECB)
iii) National Fire Code of Canada (NFC)
iv) Canadian Standards Association (CSA)
v) provincial codes and regulations

4. Interpret information pertaining to specialty glass products found on drawings and specifications.

5. Identify tools and equipment used to install specialty glass products and describe their applications and procedures for use.

6. Identify types of commercial specialty glass and describe their characteristics, properties and applications.
   i) curved
   ii) multi-laminated
   iii) multi-coloured
   iv) photovoltaic
   v) textured
   vi) heat-strengthened
   vii) tempered
   viii) mirrored
   ix) ballistic/bullet-resistant
   x) fire-resistant
   xi) patterned
   xii) coatings
   xiii) reflective
   xiv) low E (low emissivity)
   xv) impact-resistant
   xvi) insulated units
   xvii) commercial machinery glass

7. Identify types of commercial specialty glass products and describe their characteristics and applications.
   i) pass-through windows
   ii) point glazing systems
   iii) spider glass walls
   iv) sun shades
   v) canopies
   vi) guardrails/hand rails and balustrades
   vii) solariums
   viii) mirrors
   ix) shelving
   x) glass doors

xi) smoke baffles
xii) partition walls
xiii) sneeze guards
xiv) display cases
xv) glass floors
xvi) frameless
xvii) total vision systems

8. Identify types of commercial specialty product materials and describe their characteristics and applications.
   i) aluminum
   ii) stainless steel
   iii) plastic
   iv) wood
   v) vinyl/polyvinyl chloride (PVC)

9. Identify types of commercial anchoring systems and describe their applications.
   i) wedge anchors
   ii) nuts and bolts
   iii) screws
   iv) quick anchors
   v) chemical anchors

10. Identify types of commercial hardware and patch fittings and describe their applications.
   i) clamps
   ii) hinges
   iii) stand-offs
   iv) point glazing
   v) rail systems
   vi) wedge systems
   vii) closers
   viii) pivots
   ix) handles
   x) U-channels

11. Describe procedures used to measure commercial specialty glass and products.

12. Describe layout methods using benchmarks and gridlines.

13. Identify types of extrusions and describe their characteristics and applications.
   i) base shoes
   ii) U-channels
   iii) tubing

14. Identify types of gaskets and describe their characteristics and applications.
    i) vinyl
    ii) rubber
    iii) weather stripping
    iv) butyl
    v) nylon

15. Describe calculations used to determine angles of glass and frames.

16. Identify types of materials and fasteners used in the installation of specialty glass products and describe their characteristics and applications.

17. Identify types of sealants and adhesives used in the installation of specialty glass products and describe their characteristics and applications.

18. Identify factors to consider when installing specialty glass products.
    i) manufacturers specifications
    ii) product compatibility
    iii) weathering
    iv) adhesion
    v) expansion and contraction
    vi) installation sequence

19. Describe the procedures used to install wall partitions/dividers.

20. Describe the procedures used to install spider glazing.

21. Describe the procedures used to install smoke baffles.

22. Describe the procedures used to install canopies.

23. Describe the procedures used to install sunshades.

24. Describe the procedures used to install frameless heavy glass systems.

25. Describe the procedures used to assess and repair specialty glass products.

Practical Objectives

1. Practical hands-on learning activity to be determined by instructor.

GLZ-340 Shower Enclosures (12 hrs)

Learning Outcomes:

- Demonstrate knowledge of shower enclosures, their characteristics and applications.
- Demonstrate knowledge of procedures to install shower enclosures.

Red Seal Occupational Standard Reference:

5.03 Prepares materials for installation.
11.01 Lays out commercial specialty glass and products.
11.02 Assembles commercial specialty glass, products and hardware.
11.03 Installs commercial specialty glass, products and hardware.
12.01 Lays out residential specialty glass and products.
12.02 Assembles residential specialty glass, products and hardware.
12.03 Installs residential specialty glass, products and hardware.

Suggested Hours:

12 Hours

Theoretical Objectives:

1. Define terminology associated with shower enclosures.

2. Identify hazards and describe safe work practices pertaining to the installation of shower enclosures.

3. Interpret codes, standards and regulations pertaining to the installation of shower enclosures.
   i) National Building Code
   ii) National Energy Code of Canada for Buildings (NECB)
   iii) Canadian Standards Association (CSA)
   iv) provincial codes and regulations

4. Interpret information pertaining to the installation of shower enclosures found on drawings and specifications.

5. Identify tools and equipment used to install shower enclosures and describe their applications and procedures for use.

6. Identify types of shower enclosures and describe their characteristics and applications.

7. Identify types of anchoring systems and describe their characteristics and applications.
   i) nylon
   ii) screws
   iii) quick anchors
   iv) double-sided tape
   v) silicone

8. Identify types of hardware and describe their characteristics and applications.
   i) clamps
   ii) hinges
   iii) stand-offs
   iv) point glazing
   v) pivots
   vi) headers

9. Identify types of materials and fasteners and describe their characteristics and applications.

10. Identify methods used to detect defects in materials.

11. Identify types of sealants and adhesives and describe their characteristics and applications.
   i) silicones
   ii) UV glue

12. Identify factors to consider when installing shower enclosures.
   i) manufacturers specifications
   ii) product compatibility
   iii) adhesion
   iv) expansion and contraction
   v) installation sequence

13. Describe pre-assembly done in shop.

14. Describe the procedures used to layout, assemble and install shower enclosures.
   i) remove existing product
   ii) fasten product to opening
   iii) plumb, level and square product
   iv) install hardware
   v) install anchoring system
   vi) cut and fit materials
   vii) clad and flash materials

viii) install gaskets and apply sealants and adhesives
ix) apply final finishes
x) verify operation of product

Practical Objective

1. Install a shower door.

GLZ-345 Solariums (6 hrs)

Learning Outcomes:

- Demonstrate knowledge of solariums, their characteristics and applications.
- Demonstrate knowledge of procedures to install solariums.

Red Seal Occupational Standard Reference:

5.03 Prepares materials for installation.
12.01 Lays out residential specialty glass and products.
12.02 Assembles residential specialty glass, products and hardware.
12.03 Installs residential specialty glass, products and hardware.

Suggested Hours:

6 Hours

Theoretical Objectives:

1. Define terminology associated with solariums.

2. Identify hazards and describe safe work practices pertaining to the installation of solariums.

3. Interpret codes, standards and regulations pertaining to the installation of solariums.
   i) National Building Code
   ii) National Energy Code of Canada for Buildings (NECB)
   iii) Canadian Standards Association (CSA)
   iv) provincial codes and regulations

4. Interpret information pertaining to the installation of solariums found on drawings and specifications.

5. Identify tools and equipment used to install solariums and describe their applications and procedures for use.

6. Identify types of solariums and describe their characteristics and applications.

7. Identify types of anchoring systems and describe their characteristics and applications.
   i) wedge anchors
   ii) nuts and bolts
   iii) screws
   iv) quick anchors
   v) chemical anchors

8. Identify types of materials and fasteners and describe their characteristics and applications.
   i) hardware
   ii) tapes
   iii) sealants and adhesives
   iv) gaskets

9. Identify methods used to detect defects in materials.

10. Identify factors to consider when installing solariums.
   i) manufacturers specifications
   ii) product compatibility
   iii) weathering
   iv) expansion and contraction
   v) installation sequence

11. Describe pre-assembly done in shop.

12. Describe the procedures used to layout, assemble and install solariums.
   i) remove existing product
   ii) fasten product to opening
   iii) plumb, level and square product
   iv) install hardware
   v) install anchoring system
   vi) cut and fit materials
   vii) clad and flash materials
   viii) install gaskets and apply sealants and adhesives
   ix) apply final finishes
   x) verify operation of product

Practical Objectives

N/A

GLZ-350 Skylights and Sloped Glazing Systems (27 hrs)

Learning Outcomes:

- Demonstrate knowledge of skylights and sloped glazing systems, their characteristics and applications.
- Demonstrate knowledge of procedures to fabricate skylights.
- Demonstrate knowledge of procedures to install skylights.
- Demonstrate knowledge of procedures to fabricate sloped glazing systems.
- Demonstrate knowledge of procedures to install sloped glazing systems.

Red Seal Occupational Standard Reference:

7.04 Fabricates skylights and sloped glazing systems.
8.05 Installs skylights and sloped glazing systems.

Suggested Hours:

27 Hours

Theoretical Objectives:

1. Define terminology associated with skylights and sloped glazing systems.

2. Identify hazards and describe safe work practices pertaining to the fabrication and installation of skylights and sloped glazing systems.

3. Identify codes, standards and regulations pertaining to the fabrication and installation of skylights and sloped glazing systems.
   i) National Building Code (NBC)
   ii) National Energy Code of Canada for Buildings (NECB)
   iii) Canadian Standards Association (CSA)
   iv) jurisdictional codes and regulations

4. Interpret information pertaining to skylights and sloped glazing systems found on drawings and specifications.

5. Identify tools and equipment used to fabricate and install skylights and sloped glazing systems and describe their applications.

6. Identify types of skylights and sloped glazing systems and describe their characteristics and applications.
   i) ridge

ii) hip
iii) pyramid
iv) barrel vault
v) T-bar
vi) atrium

7. Identify skylights components and describe their characteristics and applications.
   i) rafters
   ii) purlins
   iii) spigots
   iv) splice plates
   v) pressure plates
   vi) gutters
   vii) flashings
   viii) insulation

8. Identify types of anchoring systems and describe their characteristics and applications.
   i) sleeve
   ii) bonded

9. Identify types of membranes and describe their characteristics and applications.
   i) EPDM rubber
   ii) peel-and-stick

10. Identify types of weather seal materials and describe their characteristics and applications.
   i) tapes
   ii) sealants and adhesives
   iii) gaskets
   iv) flashings
      - primary
      - secondary

11. Identify factors to consider when fabricating and installing skylights and sloped glazing systems.
   i) manufacturers specifications
   ii) product compatibility
   iii) adhesion
   iv) expansion and contraction
   v) installation sequence (notching, cutting and assembling components)
   vi) separation requirements of dissimilar materials (aluminum and steel)
   vii) degree of required slope

12. Describe pre-assembly done in shop.

13. Describe the procedures used to fabricate skylights.

14. Describe the procedures used to install skylights.

15. Describe the procedures used to fabricate sloped glazing systems.

16. Describe the procedures used to install sloped glazing systems.

Practical Objectives

1. Measure, fabricate and install a skylight.

GLZ-355 Job Planning (6 hrs)

Learning Outcomes:

- Demonstrate knowledge of procedures to plan and organize jobs.

Red Seal Occupational Standard Reference:

4.01 Uses documentation and reference material.
4.02 Interprets plans, drawings and specifications
4.04 Plans project tasks.
5.01 Prepares worksite.

Suggested Hours:

6 Hours

Theoretical Objectives:

1. Define terminology associated with job planning.

2. Identify sources of information relevant to job planning.
   i) safety and work-related documentation
   ii) drawings and specifications
   iii) related professionals/other trades
   iv) clients

3. Interpret codes, standards and regulations pertaining to job planning.
   i) standards and regulations
   ii) codes and by laws
   iii) permits
   iv) inspections

4. Identify factors to consider that affect scheduling and timing of work.
   i) site, weather and environmental considerations
   ii) work of other trades
   iii) material and supplies availability
   iv) public safety
   v) accessibility to work area for conveyance of materials and equipment
   vi) customer requirements
   vii) shut down requirements
   viii) work sequence

5. Describe the procedures used to coordinate job tasks and work requirements.
   i) conduct job site/hazard assessment
   ii) prepare lists of materials and supplies
   iii) determine building envelope specifications
   iv) determine installation priorities
   v) requisition equipment, components and accessories
   vi) arrange for delivery and storage of equipment/materials
   vii) determine utility requirements
   viii) coordinate/control access to work area
   ix) conduct work area inspection
   x) coordinate activities with customer and other professionals

6. Describe the procedures used to estimate work requirements.
   i) tools and equipment
   ii) components and accessories
   iii) time and costs

7. Explain how changes in workplace documents impact project requirements.
   i) request for information
   ii) change orders
   iii) engineers' reports

Practical Objectives

N/A

GLZ-360 Program Review (30 hrs)

Learning Outcomes:

- Demonstrate knowledge of the Red Seal Occupational Standard and its relationship to the Red Seal Examination.
- Demonstrate knowledge of overall comprehension of the trade in preparation for the Red Seal Examination.

Occupational Standard Reference:

Entire Red Seal Occupational Standard (RSOS)

Suggested Hours:

30 Hours

Theoretical Objectives:

1. Define and explain terminology associated with an RSOS.
   - i) major work activities (MWA)
   - ii) tasks
   - iii) sub-tasks

2. Explain how an RSOS is developed and the link it has with the Red Seal Examination.
   - i) development
   - ii) validation
   - iii) MWA and task weighting
   - iv) examination breakdown (pie-chart)

3. Identify Red Seal products and describe their use for preparing for the Red Seal Examination.
   - i) Red Seal website
   - ii) examination preparation guide
   - iii) sample questions
   - iv) self-assessment
   - v) examination breakdown
   - vi) types of exam questions
   - vii) acronyms
   - viii) mathematical formulas (if applicable)

4. Explain the relationship between the RSOS and the Curriculum Standard.

5. Review common occupational skills for the Glazier trade as identified in the RSOS.
    i) safety-related functions
    ii) tools and equipment
    iii) rigging, hoisting and lifting equipment
    iv) organizes work
    v) routine trade activities
    vi) communication and mentoring

6. Review process to fabricate and install commercial window and door systems for the Glazier trade as identified in the RSOS.

7. Review process to install residential window and door systems for the Glazier trade as identified in the RSOS.

8. Review process to fabricate and install specialty glass and products for the Glazier trade as identified in the RSOS.
    i) commercial
    ii) residential

9. Review process to perform servicing for the Glazier trade as identified in the RSOS.
    i) commercial window and door systems
    ii) residential window and door systems
    iii) specialty glass and products

Practical Objectives

N/A

Feedback and Revisions

This curriculum standard will be amended periodically; comments or suggestions for improvements should be directed to:

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Any comments or suggestions received will be reviewed and considered to determine the course of action required. If the changes are deemed to be minor, they will be held for implementation during the next review cycle. If immediate change is deemed appropriate, it will result in a revision to this version of the AACS and will be detailed in the following section.

Version Changes

Revision Date	Revision	Implementation Date
May 2024	Levels 1 & 4	Integration of MENT-700 Mentoring I and MENT-701 Mentoring II
July 1, 2022 (v 1.0)	Developed based on the 2020 RSOS and National Harmonization Recommendations	2022-2023 Training Year