

# EXHIBIT A

## FEES

<b>\$1,810/apprentice for NGA Members</b>	<b>\$2,985/apprentice for Non-Members</b>
<b>\$225 / Administrator Fee Per Apprentice, Per Year</b>	

## NGA GLAZIER CURRICULUM: 451.92 Hours (431.92 if using OSHA 10)

### YEAR ONE 144.72 HOURS

#### INTRODUCTION TO THE GLASS & GLAZING TRADE 70.02 HOURS

##### Introduction to Glazing Practices

Format: Online (MyGlassClass.com)

Hours: 1

Learning objectives: Upon completion of this course, students will be able to:

- ✓ Define terms associated with glazing
- ✓ Identify types of commonly used glass and their applications
- ✓ List common tasks performed by glaziers
- ✓ Explain common safety precautions for the glazing industry
- ✓ Identify common tools used in the glazing industry
- ✓ Describe the different methods of installing glass
- ✓ Describe best practices for measuring a rough opening
- ✓ Describe the difference between screw spline and shear block fabrication

##### The Float Glass Manufacturing Process

Format: Online (MyGlassClass.com)

Hours: 0.02

Learning objectives: This video explains how float glass is made, introducing viewers to the raw materials used to create float glass and the various stages of the float glass manufacturing process.

##### Introduction to Glass and Metals

Format: Online (MyGlassClass.com)

Hours: 0.5

Learning objectives: This course provides an introductory guide to basic product definitions, as well as frequently asked questions regarding glass & glazing performance values, load requirements, and codes & standards.

##### GANA Glazing Manual, Part 1 (Chapters 1, 2, 4, 5)

Format: Manual

Hours: 64

Learning objectives: Upon completion of the chapters referenced above, students will be familiar with:

- ✓ The specific properties and characteristics of heat-strengthened, chemically strengthened, coated, spandrel, laminated, insulating, bent and decorative

glass, as well as mirrors.

- ✓ How to read labels on glass products
- ✓ The codes associated with safety glazing in hazardous locations
- ✓ The differences between fire-rated and fire-resistive glass products

Students will be quizzed on their knowledge of the manual online at MyGlassClass.com.

## GANA Glazing Manual, Part 1 – Quiz

Format: Online (MyGlassClass.com)

Quiz Hours: 1

Learning objectives: Students will be quizzed on their knowledge of the GANA Glazing Manual, Part 1, online at MyGlassClass.com.

## Basics of Sealants

Format: Online (MyGlassClass.com)

Hours: 0.5

Learning objectives: Upon completion of this course, learners will be able to:

- ✓ Describe the purpose of sealants
- ✓ Identify common types of sealants and their characteristics
- ✓ Describe how sealants cure and the forces that act on them
- ✓ Identify types of sealant failure
- ✓ Explain how to select the correct sealant

## Basics of Insulating Glass Units

Format: Online (MyGlassClass.com)

Hours: .5

Learning objectives: Upon completion of this course, students will be able to:

- ✓ Define the term “Insulating Glass Unit”
- ✓ Identify and describe the various parts of an IGU
- ✓ Explain the function of an IG unit
- ✓ Identify common IGU applications
- ✓ Identify common reasons for IGU replacement

## Basics of Storefront & Entrances

Format: Online (MyGlassClass.com)

Hours: 0.5

Learning objectives: Upon completion of this course, students will be able to:

- ✓ Define storefront and entrance
- ✓ Identify and define the various parts of and different types of a storefront system
- ✓ Identify and define the various parts of and different types of an entrance system
- ✓ Explain what you will do as a glazier when working with storefronts and entrances

## Basics of Curtainwall

Format: Online (MyGlassClass.com)

Hours: 0.5

Learning objectives: Upon completion of this course, students will be able to:

- ✓ Define curtain wall
- ✓ Identify the types of curtain wall, as well as common terms and components
- ✓ Identify the two types of glazing methods used to install glass in stick curtain wall
- ✓ Identify the two types of waterproofing methods used in curtain wall
- ✓ Explain what you will do as a glazier when working with curtain wall

## Interpreting Common Documents

Format: Online (MyGlassClass.com)

Hours: 0.5

Learning objectives: Upon completion of this course, you will be able to identify documents commonly used in the glass and glazing industry, list the basic purpose of each of these documents, and explain the importance of each document.

## Glazing Math Essentials

Format: Online (MyGlassClass.com)

Hours: 1

Learning objectives: Upon completion of this course, learners will be able to measure materials and openings for glass design and fabrication projects using rulers and tape measures, calculate exact measurements with fractions and decimals, and measure angles using a combination square and a protractor.

## **SAFETY, JOBSITE TOOLS, AND EQUIPMENT**

**74.70 HOURS**

### PPE for Working with Flat Glass

Format: Online (MyGlassClass.com)

Hours: 0.5

Learning objectives: Upon completion of this course, learners will be able to comply with ASTM and OSHA standards for donning, wearing, removing, and maintaining personal protective equipment specific to employees in the glass industry.

### Safe Glass Handling 101

Format: Online (MyGlassClass.com)

Hours: 0.75

Learning objectives: Upon completion of this course, learners will be able to demonstrate safe glass handling when manually lifting, carrying and transferring glass to help ensure their safety as well as the safety of those around them.

### Best Practices for Removing Broken Glass

Format: Online (MyGlassClass.com)

Hours: 0.5

Learning objectives: Upon completion of this course, students will be able to:

- ✓ List safety precautions to take when removing broken glass from a window frame
- ✓ Explain how to handle broken glass

- ✓ Describe best practices for removing single-pane glass
- ✓ Detail special considerations for removing broken glass

## OSHA 30-Hour OR OSHA 10-Hour

Format: Online

Hours: 10 or 30 hours

Learning objectives: The OSHA 10 and 30 Hour Construction Industry training courses include a cross section of essential topics from OSHA Standards for Construction, 29 CFR 1926. This course is provided by the Underwriters' Laboratory (UL), an OSHA-authorized online training provider, via MyGlassClass.com. OSHA card provided by the U.S. Department of Labor upon completion.

## Employee Safety Guide v2024

Format: Manual

Hours: 38

Learning objectives: This reference guide helps employees learn how to keep themselves and others safe on the jobsite and the shop/factory floor, with guidelines on PPE, glass handling, and other workplace safety. Students will be quizzed on their knowledge of the manual online at MyGlassClass.com.

## Employee Safety Guide Quiz

Format: Online (MyGlassClass.com)

Hours: .5

Learning objectives: Students will be quizzed on their knowledge of the Employee Safety Guide manual online at MyGlassClass.com.

## Hand and Power Tool Safety for Construction

Format: Online (MyGlassClass.com)

Hours: 0.5

Learning objectives: This UL course covers the injuries and hazards associated with hand and power tools, as well as precautions for using them.

## Basic Rigging Awareness

Format: Online (MyGlassClass.com)

Hours: 1

Learning objectives: This UL course covers the common hazards associated with mobile elevated work platforms, such as aerial lifts; ways to prevent these common hazards; and safe pre-operation, operation and maintenance practices for this type of equipment.

Fall Protection Learning objectives: This UL course covers proper equipment to use when rigging a load, inspection and storage requirements for equipment, general safety rules for rigging, steps required to plan a rigging job, and how to plan and prepare a safe rigging

## Mobile Elevated Work Platforms

Format: Online (MyGlassClass.com)

Hours: 0.5

Learning objectives: This UL course covers types of fall protection and when they are

required, what employers must do to protect employees from fall hazards at work, and what kinds of fall protection can be used for different job tasks.

## Scaffold Safety Awareness

Format: Online (MyGlassClass.com)

Hours: 0.5

Learning objectives: This UL course covers common scaffold hazards, the basic principles of scaffold safety, scaffold design and wire rope shielding, inspection responsibilities, and basic fall protection safety guidelines.

## Powered Industrial Trucks

Format: Online (MyGlassClass.com)

Hours: 1.5

Learning objectives: This three-part UL course covers the current OSHA regulations related to pre- operation procedures, pre-operation inspection and maintenance, stability and handling loads

## Fall Protection

Format: Online (MyGlassClass.com)

Hours: .45

Learning objectives: This UL course covers types of fall protection and when they are required, what employers must do to protect employees from fall hazards at work, and what kinds of fall protection can be used for different job tasks.

## YEAR TWO

**143.70 HOURS**

### GLASS FABRICATION

**56.2 HOURS**

## Glass Fabrication Tools & Techniques

Format: Online (MyGlassClass.com)

Hours: 1

Learning objectives: Upon completion of this course, students will be able to:

- ✓ Define glass shop fabrication
- ✓ Identify common tasks performed by glaziers that require the use of glass fabrication power tools
- ✓ Summarize OSHA's crystalline silica rule
- ✓ Explain safety precautions to take when using glass fabrication tools
- ✓ Identify common glass fabrication power tools
- ✓ Measure and mark glass for cutting and drilling with power tools
- ✓ Describe common glass cuts made with power tools
- ✓ Describe the steps for cutting drilling and edging glass using power tools
- ✓ Describe proper glass disposal

## How to Cut Glass: Best Practices

Format: Online (MyGlassClass.com)

Hours: 1

Learning objectives: Upon completion of this course, students will be able to describe best practices for manually making and breaking straight cuts on glass and mirror.

## NGA Frameless Shower Enclosure Design & Installation Manual

Format: Manual

Hours: 21

Learning objectives: Upon completion of this manual, students will be able to:

- ✓ Design, measure and install a frameless shower enclosure

## Frameless Shower Enclosure Basics

Format: Online (MyGlassClass.com)

Hours: .5

Learning objectives: Upon completion of this course, students will be able to:

- ✓ Identify and describe various shower enclosure types
- ✓ Explain the types of hardware used in frameless shower enclosures

## Frameless Shower Enclosure Design

Format: Online (MyGlassClass.com)

Hours: .5

Learning objectives: Upon completion of this course, students will be able to:

- ✓ Identify adequate existing conditions for a frameless shower enclosure
- ✓ Discuss the design requirements for a frameless shower enclosure

## Frameless Shower Enclosure Measurement

Format: Online (MyGlassClass.com)

Hours: .5

Learning objectives: Upon completion of this course, students will be able to:

- ✓ List the tools needed to measure for a frameless shower enclosure
- ✓ Discuss how to measure a frameless shower enclosure Explain the types of hardware used in frameless shower enclosures

## Frameless Shower Enclosure Installation

Format: Online (MyGlassClass.com)

Hours: .5

Learning objectives: Upon completion of this course, students will be able to:

- ✓ List the tools needed to install a frameless shower enclosure
- ✓ Discuss how to install a frameless shower enclosure. Discuss how to measure a frameless shower enclosure Explain the types of hardware used in frameless shower enclosures

## Custom Mirror Design & Installation

Format: Online (MyGlassClass.com)

Hours: 0.2

Learning objectives: Upon completion of this course, students will be able to:

- ✓ Discuss best practices for installing a custom mirror
- ✓ Identify the tools and processes for custom mirror installation
- ✓ Explain the steps for installing a custom mirror

## Guide to Architectural Glass

Format: Manual

Hours: 30

Learning objectives: Upon completion of this course, students will be able to:

- ✓ Explain the float glass manufacturing process
- ✓ Identify types of commonly used glass
- ✓ Describe the physical properties of glass
- ✓ Identify the thermal and solar properties of float glass

## Guide to Architectural Glass Quiz

Format: Online (MyGlassClass.com)

Hours: 1

Learning objectives: Students will be quizzed on their knowledge of the Guide to Architectural Glass.

# **METAL & SYSTEM FABRICATION** **87.5 HOURS**

## Basics of Architectural Aluminum

Format: Online (MyGlassClass.com)

Hours: 0.5

Learning objectives: Upon completion of this course, students will be able to:

- ✓ Identify how architectural aluminum is used in the glass and glazing industry
- ✓ Explain aluminum's unique physical properties and identify common finishes
- ✓ Describe the characteristics of a paint finish, of an anodized finish, and of powder coat

## Metal Tools of the Trade

Format: Online (MyGlassClass.com)

Hours: 0.5

Learning objectives: Upon completion of this course, learners will be able to identify common metal fabrication tools used to cut and drill architectural aluminum, and their appropriate uses.

## Metal Fabrication Tools & Techniques

Format: Online (MyGlassClass.com)

Hours: 1

Learning objectives: Upon completion of this course, learners will be able to:

- ✓ Describe the ways in which architectural metals are used in construction
- ✓ Identify appropriate PPE and safety precautions when fabricating metal
- ✓ Identify precautions when working with anodized aluminum

- ✓ Identify the common tasks performed in metal fabrication
- ✓ Describe tools used to cut metal and best practices for cutting metal
- ✓ Describe best practices for drilling holes in metal

## Storefront Metal Fabrication Techniques

Format: Online (MyGlassClass.com)

Hours: 0.75

Learning objectives: Upon completion of this course, students will be able to:

- ✓ Identify the functional components of a storefront assembly
- ✓ Describe the fabrication process for the storefront components
- ✓ Fabricate shear blocks for mounting horizontal members to vertical mullions
- ✓ Fabricate water dam for sill can
- ✓ Explain the use of prefabricated entrance components

## Curtainwall Fabrication Techniques: Stick Systems

Format: Online (MyGlassClass.com)

Hours: 0.75

Learning objectives: Upon completion of this course, students will be able to:

- ✓ Identify the proper tools and techniques required to fabricate parts according to cut list
- ✓ Identify the functional components of a curtain wall assembly
- ✓ Describe the fabrication process for the curtain wall components
- ✓ Fabricate shear blocks for mounting horizontal members to vertical mullions
- ✓ Explain the use of prefabricated entrance components

## Commercial Fenestration Systems Manual

Format: Manual (Chapters 1-5)

Hours: 84

Learning objectives: Upon completion of this manual, students will be able to:

- ✓ Describe assembly and glazing methods for storefront, entrance, window wall, curtainwall, sloped glazing, structural glass mullion, cable wall and channel glazing systems
- ✓ Be familiar with the design considerations that affect glass selection
- ✓ Understand the scope and use of shop drawings
- ✓ Describe best practices for the care and handling of glass on the construction site

## Commercial Fenestration Systems Quiz

Format: Online (MyGlassClass.com)

Hours: 2

Learning objectives: Students will be quizzed on their knowledge of the Commercial Fenestration Systems Guide, chapters 1-5

## YEAR THREE

163.5 HOURS

### SYSTEM INSTALLATION

80.5 HOURS

#### Storefront Installation

Format: Online (MyGlassClass.com)

Hours: 1.5

Learning objectives: Upon completion of this course, students will be able to:

- ✓ Install storefront in accordance with the production drawings
- ✓ Describe worksite safety requirements
- ✓ Attach the sill and head to the building structure
- ✓ Place vertical mullions and attach horizontal members
- ✓ Install water dams
- ✓ Assemble snap-in components to the storefront frame
- ✓ Install IGUs and filler panels, install weatherproofing
- ✓ Conduct a water test

#### Commercial Entrance Installation

Format: Online (MyGlassClass.com)

Hours: 0.5

Learning objectives: Upon completion of this course, students will be able to:

- ✓ Identify the proper tools and techniques necessary to install a commercial entrance in accordance with the production drawings and manufacturer instructions
- ✓ Describe jobsite safety requirements
- ✓ Install a fabricated commercial entrance frame
- ✓ Attach a door to the entrance frame
- ✓ Install sidelites into the entrance frame

#### Curtainwall Installation: Stick Systems

Format: Online (MyGlassClass.com)

Hours: 1.5

Learning objectives: Upon completion of this course, students will be able to:

- ✓ Describe worksite safety requirements
- ✓ Install curtain wall anchors and verticals
- ✓ Attach horizontals and weather-stripping
- ✓ Set glass
- ✓ Attach pressure bars and face cap
- ✓ Conduct a water test

#### GANA Glazing Manual, Part 2 (Chapters 9,10)

Format: Manual

Hours: 30

Learning objectives: Upon completion of the chapters referenced above, students will be familiar with:

- ✓ General guidelines for glazing system design

- ✓ Specific guidelines for confirming material compatibility and setting glass
- ✓ Wet and dry glazing systems
- ✓ Pressure glazed systems
- ✓ Butt joint glazing
- ✓ Structural silicone glazing
- ✓ Acrylic foam tape structural glazing
- ✓ Sloped glazing
- ✓ Special considerations related to bent glass

## GANA Glazing Manual, Part 2 – Quiz

Format: Online ([MyGlassClass.com](http://MyGlassClass.com))

Hours: 1

Learning objectives: Students will be quizzed on their knowledge of Part 3 of the GANA Glazing Manual online at [MyGlassClass.com](http://MyGlassClass.com).

## Sealants Manual

Format: Manual

Hours: 45

Learning objectives: Upon completion of this manual, students will be able to:

- ✓ Identify common sealants and sealant joint types
- ✓ Describe the purpose, challenges, and installation considerations related to sealant use in building envelope systems
- ✓ Describe common substrates and materials that sealants come in contact with during their service life, as well as compatibility/incompatibility issues
- ✓ Describe good sealant application practices
- ✓ Explain how to remove and re-apply sealant in remediation work
- ✓ Identify protective glazing applications for sealants

## Sealants Manual Quiz

Format: Online ([MyGlassClass.com](http://MyGlassClass.com))

Hours: 1

Learning objectives: Students will be quizzed on their knowledge of the Guide to Architectural Glass online at [MyGlassClass.com](http://MyGlassClass.com).

## CODES & BLUEPRINTS

83 HOURS

## Guide to the Glass and Glazing Requirements of the Model Building Codes

Format: Manual

Hours: 20

Learning objectives: This guide will assist glaziers and glass installers in complying with all appropriate glazing requirements of the Model Building Codes. Includes chapters on Building Codes, Safety Glazing, Fire-Rated Glazing, Structural Requirements, Energy Conservation Codes, Green Construction, Accessibility, Repair and Alteration Work, and Compliance and Responsibility.

Students will be quizzed on their knowledge of the manual online at MyGlassClass.com.

## Guide to the Glass and Glazing Requirements of the Model Building Codes Course

Format: Online (MyGlassClass.com)

Hours: 2

Students will be required to take a complementary online course that walks them through scenarios to demonstrate their knowledge of the Guide to Glass and Glazing Requirements manual. Students will also be quizzed on their knowledge of the manual online at MyGlassClass.com.

## Glass and Glazing Estimating Essentials Manual (Chapters 1-7)

Format: Manual

Hours: 60

Learning objectives: Upon completion of this manual, students will be able to:

- ✓ Identify the various types of pages that appear on blueprints
- ✓ Understand and identify the meanings of various symbols
- ✓ Understand how to distinguish between floor plans, elevations, sections, details, window and door schedules
- ✓ Understand how to interpret dimensioning and scale

## Reading Architectural Plans

Format: Online (MyGlassClass.com)

Hours: 1

Learning objectives: Upon completion of this course, you will be able to:

- ✓ Identify the various types of pages within architectural plans
- ✓ Understand and identify the meanings of various symbols
- ✓ Understand how to distinguish between floor plans, elevations, sections, details, and window and door schedules
- ✓ Understand how to interpret dimensioning and scale