

# ATIW-2350: ORNAMENTAL SYSTEMS & RAILINGS

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## Cuyahoga Community College

**Viewing: ATIW-2350 : Ornamental Systems & Railings**

**Board of Trustees:**

January 2020

**Academic Term:**

Fall 2020

**Subject Code**

ATIW - Appld Indus Tech - Ironworking

**Course Number:**

2350

**Title:**

Ornamental Systems & Railings

**Catalog Description:**

Installation methods for and identification of various ornamental applications, including curtainwall and window wall systems, stairs, railings, and wall handrails, and their anchors and fasteners. Use of hand and power tools for installation. Operation of various layout instruments.

**Credit Hour(s):**

2

**Lecture Hour(s):**

2

## Requisites

**Prerequisite and Corequisite**

ATIW-2330 Pre-Construction Planning of Specialty Applications or concurrent enrollment, or departmental approval.

## Outcomes

**Course Outcome(s):**

Identify the various types of curtain walls and the components of typical curtain wall system.

**Objective(s):**

1. Discuss the basic principles and components of a curtain wall system.
2. Discuss the different types of curtain wall systems.
3. Discuss methods of establishing Ironworker control lines.
4. Review the procedures for receiving, unloading, handling and distributing curtain wall materials.
5. Review the procedures for the installation of curtain wall system components.
6. Identify coping, column covers, and cladding.
7. Discuss testing of curtain wall systems.

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**Course Outcome(s):**

Identify the various types of window walls and the components of a typical window wall system.

**Objective(s):**

1. Describe a typical window wall system, its components, and the three main types of window wall systems.
  2. Describe how to unload, handle, and distribute window wall materials.
  3. Review the steps to lay out and erect a window wall.
  4. Explain the purpose of flashings, sealants, gaskets, and insulation in a window wall system.
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**Course Outcome(s):**

Identify the various types of sloped walls and skylights

**Objective(s):**

1. Discuss the general scope of sloped walls and skylights.
  2. Review the layout of a sloped wall and skylight.
  3. Explain how to install a sill can, splice a joint, and install a head can.
  4. Discuss assembling and installing a sloped wall or skylight.
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**Course Outcome(s):**

Recognize different types of storefronts, entrance-ways, and cable walls.

**Objective(s):**

1. Discuss storefronts and entryways.
  2. Discuss the delivery and storage of materials.
  3. Describe a typical cable wall installation.
  4. Review the procedures for erecting a cable wall.
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**Course Outcome(s):**

Identify various types of sealants.

**Objective(s):**

1. Interpret Material Safety Data Sheets.
  2. Discuss types of sealants and requirements for proper adhesion.
  3. Identify the most common joint types.
  4. Identify common tools and equipment items necessary to apply sealants.
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**Course Outcome(s):**

Identify various types of glazing systems and glass rails

**Objective(s):**

1. Discuss the characteristics of architectural glass.
  2. Identify common glazing tools, equipment, and accessories.
  3. Explain the procedures for receiving and storing glass.
  4. Review the procedures for installing glass rails.
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**Course Outcome(s):**

Discuss the procedures for testing for air and water infiltration

**Objective(s):**

1. Discuss field testing window and curtain wall systems.
  2. Discuss the construction and use of the test chamber.
  3. Review the procedures for conducting an on-site test.
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**Course Outcome(s):**

Identify the types of doors installed

**Objective(s):**

1. Describe the different types of doors and their components.
  2. Describe the installation of vaults and safe deposit boxes.
  3. Describe the types and uses of hanger doors.
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**Course Outcome(s):**

Install swing doors.

**Objective(s):**

1. Identify the types of door closures.
  2. Install a surface mounted door closure.
  3. Install an overhead concealed door closure.
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**Methods of Evaluation:**

1. Quizzes
2. Exams
3. Classroom participation
4. Demonstration of project assignments

**Course Content Outline:**

1. Hand tools
  - a. Measuring and layout tools
  - b. Hammers
  - c. Chisels, punches, and bars
  - d. Fastening tools
  - e. Taps and dies
  - f. Twist drills
  - g. Pliers and clamps
  - h. Screwdrivers
  - i. Shears and snips
  - j. Saws and files
  - k. Glazing tools
2. Power tools
  - a. Drill motors
  - b. Screw gun
  - c. Rotary hammer drill
  - d. Hammer drill
  - e. Magnetic drill press
  - f. Saws
    - i. miter
    - ii. chop
    - iii. jig
    - iv. reciprocating
    - v. portable band
    - vi. circular
  - g. Impact wrenches
  - h. Disc grinders
3. Anchors and fasteners
  - a. Identification
  - b. Installation
4. Curtain wall systems
  - a. Basic principles
  - b. Components
  - c. Stick walls
  - d. Unit curtain walls
  - e. Unit and mullion curtain walls
  - f. Panel curtain walls
  - g. Column cover and spandrel curtain walls
  - h. Pressure walls
    - i. EFCO
    - ii. kawneer
    - iii. custom
    - iv. structural glaze
5. Window wall systems

- a. Flashing
  - b. Sealants
  - c. Gaskets
  - d. Insulation
  - e. EFCO window walls
6. Stairs
- a. Types
  - b. Classes
  - c. Components
  - d. Installation plan
7. Railings
- a. Types
  - b. Components
  - c. Installation methods
8. Wall handrails
- a. Types
  - b. Shop details
  - c. Erection procedures
9. Layout instruments
- a. Types
    - i. laser
    - ii. transit and theodolite
    - iii. electronic digital theodolite
  - b. Care and maintenance
10. Procedures for layout
- a. Bench marks
  - b. Elevation plans
  - c. Plumb bobs and lines
  - d. Angles
  - e. Control lines

## Resources

Ambrose, James. *Simplified Design of Steel Structures (8th ed.)*. 8th ed. New York: J. Wiley & Sons, 2007.

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International Association of Bridge, Structural and Ornamental Iron Workers. *Architectural and Ornamental Training Manual for Ironworkers: Hand Tools, Power Tools, Anchors and Fasteners, Volume 1*. Washington, D.C.: AFL-CIO, 1996.

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International Association of Bridge, Structural and Ornamental Iron Workers. *Architectural and Ornamental Training Manual for Ironworkers: Operating Layout Instruments, Constructing Curtain Walls, Constructing Window Walls, Volume 2*. Washington, D.C.: AFL-CIO, 1996.

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## Resources Other

International Association of Bridge, Structural, Ornamental and Reinforcing IronWorkers, Instructor Materials. <http://www.ironworkers.org/training/for-instructors>

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