

# ATPL-2808: SPECIAL TOPICS: CAST IRON PIPE: APPLICATION AND INSTALLATION

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## Cuyahoga Community College

**Viewing: ATPL-2808 : Special Topics: Cast Iron Pipe: Application and Installation**

**Academic Term:**

Fall 2026

**Subject Code**

ATPL - Applied Ind Tech - Plumbers

**Course Number:**

2808

**Title:**

Special Topics: Cast Iron Pipe: Application and Installation

**Catalog Description:**

Advanced course covering the application and installation of cast iron pipe including waste water drainage and venting requirements. Also covered are installation techniques, applied math, construction tools and equipment and interpretation of mechanical drawings.

**Credit Hour(s):**

2

**Lecture Hour(s):**

2

## Requisites

**Prerequisite and Corequisite**

Departmental approval: admission to program.

## Outcomes

**Course Outcome(s):**

Discuss the applications of cast iron pipe and identify the different types of pipe.

**Objective(s):**

1. Identify the applications of cast iron pipe used in the residential and commercial industry.
2. Explain how cast iron pipe is manufactured and discuss the importance of quality control.
3. List the different fittings used to join pipe.
4. Identify the various vertical and horizontal supports, clamps and suspension hangers.
5. Review the plumbing code standards relative to venting and waste water drainage.

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**Course Outcome(s):**

Discuss the safety procedures as prescribed by the Occupational Safety and Health Administration (OSHA) and the Copper Development Association (CDA) for worker protection

**Objective(s):**

1. Identify the hazards related to working with cast iron.
  2. Discuss the procedures used to protect the worker during cast iron pipe installations.
  3. List the Personal Protection Equipment (PPE) as prescribed by OSHA, required for safe installations.
  4. Explain how heated cast iron can cause severe burns.
  5. Discuss the respiratory risks caused by fumes generated during joining operations.
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**Course Outcome(s):**

Interpret mechanical drawings and schematics and review related math concepts for material estimating, layout procedures, and pipe locations.

**Objective(s):**

1. Identify plumbing supply and waste line requirements on mechanical drawings.
2. Differentiate between mechanical drawings and schematics.
3. Determine pipe locations in the floors. Walls and ceilings from floor plans and specifications.
4. Estimate quantities of pipe and pipe fittings required for mechanical installations.
5. Establish different lists required for materials, tools, and equipment.
6. Review trade-related math concepts necessary for pipe layout and to install mechanical supply and waste lines.

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**Course Outcome(s):**

Explain and follow procedures for locating mechanical requirements for residential and commercial structures.

**Objective(s):**

1. Locate the work area and position the materials and tools required for mechanical installations.
2. Layout locations of respective copper supply and waste lines using applied math and geometry.
3. Select proper hand and power tools and safely operate them to perform installations.
4. Employ safety precautions as prescribed by OSHA and the CDA for personal safety and for other workers.

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**Methods of Evaluation:**

1. Attendance
2. Participation
3. Assignments
4. Exams

**Course Content Outline:**

1. Applications and Pipe
  1. Residential
    - a. Drainage systems
    - b. Sewer
    - c. Venting
  2. Commercial
    - a. Drainage
    - b. Storm
    - c. Sewer
    - d. Venting
  3. Pipe Manufacturing
    - a. Seamless
    - b. Rolled
    - c. Composition of Materials
4. Fittings
  - a. Wyes
  - b. Sanitary Tees
  - c. Bends
5. Suspension
  - a. Supports
  - b. Hangers
  - c. Clamps
  - d. Fasteners
6. Code standards

- a. Venting
  - b. Drainage
  - c. Storm
1. Safety Procedures
  1. Id Hazards
    - a. Fires
    - b. Abrasions
    - c. Burns
    - d. Physical strains
  2. Procedures for protection of worker(s)
    - a. Pre task safety meetings
    - b. Knowing the safety procedures of job site and employer
    - c. Understanding OSHA regulations
  3. PPE – ID and use
    - a. Fire proof/heat resistance materials
    - b. Proper body, foot and hand protection
    - c. Eye and Face protection
  4. Respiratory risks
    - a. Breathing air
    - b. Environmental
    - c. Protection
  1. Material, layout and locations
    - a. Id supply and waste on drawings
      - i. Code requirements
      - ii. Interpret water and waste lines
      - iii. Understanding what drawings to look at
    - b. Mechanical drawings vs. schematics
      - i. What is on mechanical drawings
      - ii. What is lacking on mechanical drawings
      - iii. Types of schematics
      - iv. Schematic use in the installation process
    - c. Determine locations of pipes
      - i. Understanding floor plans
      - ii. Using the correct revisions
      - iii. Measurements from common locations
      - iv. Understanding job Specifications
    - d. Estimate quantities
      - i. What is estimating
      - ii. How to estimate from drawings and specifications
      - iii. Common procedures
    - e. Making lists
      - i. Tools
      - ii. Safety
      - iii. Equipment
      - iv. Materials
    - f. Review of trade related math
      - i. Types of Measurements
      - ii. Geometry related to the installs
      - iii. Using math for quick lay outs
  2. Installations for Residential and Commercial
    - a. Location, tools and materials required
      - i. Locate area of installation
      - ii. Stage tools required
      - iii. Gather materials
      - iv. Check PPE
    - b. Layout Locations using math
      - i. Drawings for layout
      - ii. Demonstrate use of applied geometry math
      - iii. Waste vs water supply layouts

- c. Selection of tools
  - i. Safe tool useage
  - ii. Tool select
- d. Use of Proper safety equipment
  - i. PPE
  - ii. Jobsite and employer safety regulations
  - iii. Worker safety

### Religious Accommodation

Before reviewing the course schedule, students should carefully review the following religious accommodation policy and other required instructional policies:

#### Religious Accommodation:

Students seeking an accommodation for absences permitted under Ohio's Testing Your Faith Act must provide the instructor with written notice of the specific dates for which the student requires an accommodation and must do so not later than fourteen (14) days after the first day of instruction. Please submit requests for accommodations at this link: <https://portal2.tri-c.edu/ReligiousAccommodation/> Religious Accommodation Form. Students with questions about their religious accommodations under Ohio's Testing Your Faith Act may contact the College's Office of General Counsel and Legal Services by phone at 216.987.4856 or via email at [legal@tri-c.edu](mailto:legal@tri-c.edu).

#### Other Required Instructional Policies:

<https://www.tri-c.edu/student-resources/curriculum/documents/syllabus-part-b.pdf>

### Weekly Schedule

	Topics
Week 1	Introduction to Cast Iron Pipe Applications
Week 2	Residential Drainage, Sewer, and Venting Systems
Week 3	Commercial Drainage, Storm, Sewer, and Venting Systems
Week 4	Cast Iron Pipe Manufacturing Methods and Materials
Week 5	Cast Iron Pipe Types and Applications
Week 6	Fittings: Wyes, Sanitary Tees, and Bends
Week 7	Pipe Suspension, Supports, Hangers, and Clamps
Week 8	Plumbing Code Standards: Drainage, Venting, and Storm Systems
Week 9	Jobsite Safety and Hazard Identification
Week 10	OSHA Safety Procedures and Personal Protective Equipment (PPE)
Week 11	Fire, Burn, Abrasion, and Respiratory Risks
Week 12	Mechanical Drawings vs. Schematics
Week 13	Interpreting Floor Plans, Specifications, and Revisions
Week 14	Pipe Location Layout Using Applied Math and Geometry
Week 15	Estimating Materials, Tools, and Equipment
Week 16	Residential and Commercial Installation Procedures

The Course Schedule is subject to change due to pedagogical needs, instructor discretion, parts of term, and unexpected events.

### Required/Recommended Readings

Instructor-provided materials

### Resources for the Instructor

United Association Training Department. *Drainage*. Annapolis, MD: United Association , [www.ua.org/training](http://www.ua.org/training)

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United Association Training Department. *Soldering and Brazing*. Annapolis, MD: United Association, [www.ua.org/training](http://www.ua.org/training)

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**Additional Resources for the Instructor**

[www.copper.org](https://catalog.tri-c.edu/www.copper.org) (https://catalog.tri-c.edu/www.copper.org)

[www.ua.org](https://catalog.tri-c.edu/www.ua.org) (https://catalog.tri-c.edu/www.ua.org)

[www.kpsec.freeuk.com/solder.htm](https://catalog.tri-c.edu/www.kpsec.freeuk.com/solder.htm) (https://catalog.tri-c.edu/www.kpsec.freeuk.com/solder.htm)

[www.brazing.com](https://catalog.tri-c.edu/www.brazing.com) (https://catalog.tri-c.edu/www.brazing.com)

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