

# ATPL-1230: WATER SUPPLY

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## Cuyahoga Community College

### Viewing: ATPL-1230 : Water Supply

**Board of Trustees:**

2012-06-28

**Academic Term:**

Spring 2019

**Subject Code**

ATPL - Applied Ind Tech - Plumbers

**Course Number:**

1230

**Title:**

Water Supply

**Catalog Description:**

Overview of potable water from its source to its end use. Includes discussion of water treatment, water mains, service and building water systems including water system layout, installation and maintenance, and different effects of the introduction of heat to potable water.

**Credit Hour(s):**

2

**Lecture Hour(s):**

2

## Requisites

**Prerequisite and Corequisite**

Departmental approval: admission to Plumbers' apprenticeship program.

## Outcomes

**Course Outcome(s):**

1. Identify the sources of non-potable water and systems used to create potable water.

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**Course Outcome(s):**

2. Discuss the basic layout principles of water system layout of potable water.

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**Course Outcome(s):**

3. Install and maintain potable water supply systems for general use.

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**Course Outcome(s):**

4. Recognize the differences that occur in potable water when heat is introduced into the system.

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**Methods of Evaluation:**

1. Tests
2. Quizzes
3. Class participation

**Course Content Outline:**

1. Potable Water
  - a. Sources
    - i. Rivers
    - ii. Lakes
    - iii. Wells
    - iv. Gray Water
  - b. Harmful Organisms
    - i. Algae
    - ii. Bacteria
    - iii. Medical Waste
    - iv. Minerals
  - c. Purification Methods
    - i. Boiling
    - ii. Ultraviolet Light
    - iii. Chlorination
    - iv. Aggregation
  - d. Hard And Soft Water
    - i. Definitions
    - ii. Uses
    - iii. Effects
2. Water System Layout
  - a. Grid Layouts
    - i. Interpretation
    - ii. Application
    - iii. Industrial
    - iv. Commercial
    - v. Residential
  - b. Connectors
    - i. Valves
    - ii. Tees
    - iii. Taps
    - iv. Stops
  - c. Pipe
    - i. Sizes
    - ii. Material Type
    - iii. Installation
    - iv. Taps
  - d. Safety Measures
    - i. Trenching
    - ii. Personal Protective Equipment
    - iii. Special Equipment
  - e. Water Pressure
    - i. Effects
    - ii. Hazards
    - iii. Materials
3. Installation And Maintenance
  - a. Design Aspects
    - i. Pipe Size
    - ii. Specifications
    - iii. Materials
    - iv. Code Requirements
  - b. Layout
    - i. Pipe And Fitting Locations
    - ii. Components
    - iii. Equipment
  - c. Safety And Regulatory Requirements
    - i. Backflow Protection
    - ii. Check Valves

- iii. Pressure Reducing Valves
    - iv. Arrestors
  - d. Effects Of Water Pressure
    - i. Rupture
    - ii. Material Life And Fatigue
    - iii. Hammering
- 4. Potable Water And Heat
  - a. Expansion
    - i. Pipe And Connections Stress
    - ii. Pressure Differences
    - iii. Safety Concerns
  - b. Safety Device Installation
    - i. Temperature And Pressure Valves
    - ii. Expansion Tanks
    - iii. Open And Closed Systems
    - iv. Ohio Plumbing Code
  - c. Heating And Maintenance Methods
    - i. Instantaneous Water Heaters
    - ii. Tanks
    - iii. Solar
    - iv. Point Of Use
    - v. Circulating Systems
  - d. Code Clarification
    - i. Hot Water
    - ii. Tepid Water
    - iii. Tempered Water

## Resources

Haestad Methods (Author), Thomas M. Walski (Author), Donald V. Chase (Author), Dragan A. Savic (Author), Walter M. Grayman (Author), Stephen Beckwith (Author), Edmundo Koelle. *Advanced Water Distribution Modeling and Management*. 1st. Haestad Press Waterbury, CT, 2001.

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Author), Edward D. Schoeder. *Water Quality: Characteristics, Modeling and Modification*. 1 edition. Prentice Hall;Upper Saddle River, New Jersey, 2001.

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State of Ohio. *State of Ohio Plumbing Code*. current. State of Ohio, 2011.

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## Resources Other

1. [www.waterandwastewater.com/www\\_services/.../supply.htm](http://www.waterandwastewater.com/www_services/.../supply.htm) ([http://www.waterandwastewater.com/www\\_services/.../supply.htm](http://www.waterandwastewater.com/www_services/.../supply.htm))
2. <http://books.google.com/books?id=VO-Unp1sFAMC&printsec=frontcover&dq=environmental+engineering&hl=en#v=onepage&q=environmental%20engineering&f=false> (<http://books.google.com/books/?id=VO-Unp1sFAMC&printsec=frontcover&dq=environmental+engineering&hl=en#v=onepage&q=environmental%20engineering&f=false>)

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