

# ATPF-1220: BASIC PIPEFITTING LAYOUT

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## Cuyahoga Community College

### Viewing: ATPF-1220 : Basic Pipefitting Layout

**Board of Trustees:**

1/30/2025

**Academic Term:**

Fall 2025

**Subject Code**

ATPF - Applied Ind Tech - Pipefitters

**Course Number:**

1220

**Title:**

Basic Pipefitting Layout

**Catalog Description:**

A study of basic layout for pipefitters and technicians in the construction industry. Covers calculations involved in designing, installing and repairing piping runs. Reviews basic mathematics for preparation to succeed in problem solving found on the job.

**Credit Hour(s):**

1

**Lecture Hour(s):**

1

## Requisites

**Prerequisite and Corequisite**

Departmental approval: admission to Pipefitter's apprenticeship program.

## Outcomes

**Course Outcome(s):**

1. Perform basic applied mathematical operations encountered in piping situations.

**Objective(s):**

1. Review numerical calculations with whole numbers used in on the job.
2. Exhibit an ability to add, subtract, multiply and divide measurements taken by hand with a high degree of accuracy.

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**Course Outcome(s):**

2. Introduction to the use of a calculator for pipefitting work.

**Objective(s):**

1. Demonstrate ability to use calculator for addition, subtraction, multiplication and division for take-offs of fittings.
2. Practice ability to store and recall numbers from memory.
3. Compute squares and square roots as needed in piping situations figuring areas of pipe and volume.

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**Course Outcome(s):**

3. Demonstrate ability to work with metric and U.S. Customary Units of measure.

**Objective(s):**

1. Recognize metric units of measure.
2. Solve problems in measurement taking and convert between different metric units of measure.
3. Change and convert between metric and U.S. customary units of measure.

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**Methods of Evaluation:**

1. Quizzes
2. Tests
3. Class participation.

**Course Content Outline:**

1. Review of basic arithmetical calculations used in daily piping situations.
  - a. Place values
  - b. Addition
    - i. By hand
    - ii. Checking
  - c. Subtraction
    - i. By hand
    - ii. Checking
  - d. Multiplication
    - i. By hand
    - ii. Checking
  - e. Division
    - i. Remainders in division
    - ii. By hand
    - iii. Checking
2. Using a Calculator for layout and measurement taking.
  - a. TI-36 X calculator
    - i. Number block Keys
    - ii. Operations block keys
    - iii. Trig block keys
    - iv. Exponential block keys
    - v. Memory block keys
  - b. Basic arithmetic work used in piping layout
    - i. Addition
    - ii. Subtraction
    - iii. Multiplication
    - iv. Division
  - c. Storing and memory functions
  - d. Squares and Square roots
3. Metric system
  - a. Units of length
    - i. Millimeters
    - ii. Centimeters
    - iii. Decimeters
    - iv. Meters
    - v. Kilometer
  - b. Metric conversions
    - i. Multiples of ten
    - ii. Dividing by ten
  - c. Metric and U.S. customary conversions
    - i. Inch-foot, metric
    - ii. Inch-pound, metric
    - iii. Using TI-36X calculator to convert units

## Resources

United Association. *Math for the Sprinkler Fitter Study Guide*. Current ed. United Association Annapolis Md, 2011.

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Author: Graves. *The Pipe Fitter Blue Book*. Edition: revised. Graves Pub Co; Nashville, AR., 2002.

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Author: Bowman. *Modern Methods of Pipe Fabrications*. 12 edition. Claitors Pub Div; Baton Rouge, 2002.

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Hamilton, Johnny. *Pipefitters Math Guide*. Construction Trades Press Clinton: NC, 1989.

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## Resources Other

Wright State's Math Refresher (2023). <https://engineering-computer-science.wright.edu/research/engineering-mathematics-topics-and-materials> (<https://engineering-computer-science.wright.edu/research/engineering-mathematics-topics-and-materials/>)

<https://www.tpc-training.com/pages/pipe-fitter-training-courses> (<https://www.tpc-training.com/pages/pipe-fitter-training-courses/>) (2024)

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