

APPT 124: MATHEMATICS FOR RESIDENTIAL PLUMBING

Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2024
Units:	2.5
Hours:	18 lecture, 36 laboratory per quarter (54 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Residential Plumbing Apprenticeship Program.
Advisory:	Current employment in the pipe trades industry; not open to students with credit in APPT 195.
Degree & Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Student Learning Outcomes

- A student will be able to calculate pipe fitting allowances in pipe measurements.
- A student will be able to perform mathematical operations.
- A student will be able to calculate piping off-sets.

Description

A review of basic math concepts and operation, followed by instruction in pipe measurements, formulas, and off-set calculations. Use of common electronic calculators will be included.

Course Objectives

The student will be able to:

1. Perform simple addition, subtraction, multiplication, and division
2. Calculate pipe measurements and fitting allowances
3. Perform off-set calculations
4. Demonstrate proficiency in use of a calculator

Course Content

1. Perform simple addition, subtraction, multiplication, and division
 - a. Add, subtract, multiply, and divide fractions
 - b. Perform math operations with decimals, percentages
 - c. Convert decimal dimensions to feet and inches
 - d. Create mathematical formulas from written content
 - e. Mathematically convert various units of measurement
 - f. Define algebra terms
2. Calculate pipe measurements and fitting allowances
 - a. Calculate pipe fitting take-offs
 - b. Use algebra and equations as a problem solving strategy

- c. Review units of measurement for length, area, and volume
 - d. Calculate pipe length when offsetting around objects
 - e. Define geometry terms
 - f. Review triangle basics
3. Perform off-set calculations
 - a. Apply Pythagorean Theorem and 3-4-5 method
 - b. Apply triangles to piping applications
 - c. Perform geometry and triangle calculations
 - d. Use geometry and triangles in field applications
 - e. Perform parallel offset layout calculations
 4. Demonstrate proficiency in use of a calculator
 - a. Calculate volume in various plumbing applications
 - b. Calculate pressure in various plumbing applications
 - c. Apply trigonometry to piping problems

Lab Content

1. Layout 90 degree corner using 3-4-5 triangle method
2. Layout 45 degree offset
3. Layout parallel piping offset

Special Facilities and/or Equipment

None.

Method(s) of Evaluation

Methods of Evaluation may include but are not limited to the following:

Results of written exercises, short quizzes, and end of session and end of module assessment

Results of class participation

Maintenance of a student's workbook with questions drawn from text

Method(s) of Instruction

Methods of Instruction may include but are not limited to the following:

Lecture

Hands-on assignments

Demonstrations

Representative Text(s) and Other Materials

International Pipe Trades Joint Training Committee, Inc.. [Related Math](#). 2016.

This is the standard textbook/workbook used for this course. Although it is older than 5 years, it is the most current book used when teaching this course.

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

1. Readings from assigned textbook
 - a. Lessons on Basic Math Review, chapter 1
 - b. Pipe Measurements-One, chapter 2

2. Writing assignments given in the laboratory
 - a. Answer study questions in assigned text, chapters 1 and 2
 - b. Record field notes from lab activity piping projects

Discipline(s)

Plumbing