APPT 166: PIPEFITTING TECHNOLOGIES I

Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2025
Units:	4.5
Hours:	36 lecture, 66 laboratory per quarter (102 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Plumbing & Pipefitting Apprenticeship Program.
Degree & Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade Only
Repeatability:	Not Repeatable

Student Learning Outcomes

- A student will be able to apply safety techniques related to welding and burning of metals.
- A student will be able to produce weld samples in the flat, horizontal, vertical and overhead positions.
- A student will be able to demonstrate welding techniques and methods.

Description

Advanced course of the Plumbing and Pipefitting Apprenticeship program. This course provides students with a working knowledge of piping principles, as it relates to prefabrication, metal ARC welding, gas ARC welding, TIG welding, MIG welding, and oxygen/acetylene burning and design technologies.

Course Objectives

The student will be able to:

1. Demonstrate safety related to welding technology practices
2. Demonstrate welding techniques and methods for design
3. Demonstrate how to weld/design piping systems
4. Demonstrate piping design in building
5. Demonstrate use of a P&ID

Course Content

1. Safety
   a. Review safety specifications for setup and teardown
   b. Review OSHA practices
2. Welding techniques
   a. Weld a metal plate and pipe to standards and specifications
   b. Prepare a weld layout
   c. Complete a designed weld
   d. Perform a piping weld/design
3. Pipe welding/design
   a. Weld joints for pipe
   b. Oxy-acetylene welding
   c. Create a layout on equipment
   d. Prefabrication and assembly

Lab Content

Students will work individually and in teams on the welding and burning techniques used on the job site in this laboratory:

1. Prefabrication and assembly
2. Basic welding techniques
3. Pipe fitting and welding
4. Oxy-fuel cutting and SMAW techniques
5. GTAW welding techniques
6. Welding safety practices
7. Piping layout and design

Special Facilities and/or Equipment

1. Laboratory with welding equipment
2. Personal protective equipment
3. When taught via Foothill Global Access, on-going access to computer with email software and hardware; email address

Method(s) of Evaluation

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

Written examination
Hands-on demonstration
Chapter quizzes
Group and classroom participation
Punctuality

Method(s) of Instruction

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

Lecture
Discussion
Laboratory
Demonstration

Representative Text(s) and Other Materials

Frankland, Thomas W.. Pipe Trades Pocket Manual. 1984.

. Piping Handbook and Offset Formulas. 2005.

. Oxy-Fuel Practices. 2016.

Texts older than five years may be utilized in this course as industry-standard texts.

2022 California Plumbing Code (Code of Regulations Title 24, Part 5).

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

1. Readings from the Piping Handbook
    a. The theory of SMAW welding as it pertains to the trades
    b. The theory of GTAW as it pertains to the trades
2. Writing assignments include homework from:
    a. Written OSHA practices used in the laboratory
    b. Types of welding techniques used for various applications
    c. Safety enforced in the field
3. Code book reading assignments
    a. Code requirements for building design
    b. Building prefabrication

Discipline(s)

Plumbing