

APPT 137B: P-401B APPLIED WELDING

Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2024
Units:	1.5
Hours:	54 laboratory per quarter (54 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Plumbing Technology Apprenticeship Program.
Advisory:	Not open to students with credit in APPR 117.
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 successful student will be able to demonstrate the proper assembly of oxy-fuel equipment.
- A successful student will be able to demonstrate proper flame cutting techniques on steel plate and pipe.
- A successful student will be able to describe electrodes and the fundamental operating characteristics of SMAW.

Description

Instruction and practice in oxy-fuel cutting, oxy-fuel welding, and arc welding of steel plate and pipe. Safety and accuracy in measuring, lay-out, and torch handling is emphasized.

Course Objectives

The student will be able to:

1. Describe the basic theoretical principles associated with cutting and welding steel
2. Safely perform cutting and welding processes
3. Set up and use oxy-fuel and arc welding equipment
4. Measure, lay-out, cut, and weld steel plate and pipe for fabrication

Course Content

1. Describe the basic theoretical principles associated with cutting and welding steel
 - a. Weld ability of metals
 - b. Welding processes and applications
 - c. Filler metal selection
 - d. Welding joint design
2. Safely perform cutting and welding processes

- a. Burn prevention
 - b. Eye, ear, and respiratory protection
 - c. Ventilation
 - d. Electrical and fire protection
 - e. Equipment maintenance
3. Set up and use oxy-fuel and arc welding equipment
 - a. Equipment set-up and operation
 - b. Fuel gases
 - c. Cutting torch tips
 - d. Chemistry and physics of flame cutting
 - e. Oxy-fuel welding
 - f. Pipe cutting and layout
 4. Measure, lay-out, cut, and weld steel plate and pipe for fabrication
 - a. Welding equipment set-up and operation
 - b. Arc welding of plate and pipe

Lab Content

Students will work individually and in teams on cutting and welding steel plate and pipe.

Special Facilities and/or Equipment

1. Laboratory with cutting and welding tools.
2. 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:

- Results of written exercises and final examination
- Satisfactory completion of hands-on projects
- Maintenance of a student's workbook with questions drawn from text
- Group and classroom participation

Method(s) of Instruction

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

- Lecture
- Lab assignment
- Group discussion
- Demonstration

Representative Text(s) and Other Materials

Jeffus, Larry. Welding Principles and Applications, 7th ed.. 2012.

International Pipe Trades Joint Training Committee. Oxy-Fuel Practices. 2016.

International Pipe Trades Joint Training Committee. Welding Practices & Procedures for the Pipe Trades. 2016.

KORE-TECKX, Inc.. The Pipe Fitters Field Book. 2015.

Although these textbooks are older than 5 years, they conform to national training standards and are considered seminal works in the discipline. We will adopt the next edition of each text, as it is published.

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

1. Readings from assigned textbook Welding Principles and Applications
 - a. Chapter 2: Safety in Welding
 - b. Chapter 5: Shielded Metal Arc Equipment and Setup
2. Writing assignments given in the laboratory
 - a. Essays and exams on welding safety
 - b. Essay and exams on welding processes, applications, and filler metal selection

Discipline(s)

Plumbing