

# APPT 143A: BEGINNING CUTTING, FIT-UP & WELDING

## Foothill College Course Outline of Record

Heading	Value
Effective Term:	Spring 2023
Units:	2
Hours:	12 lecture, 42 laboratory per quarter (54 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Steamfitting & Pipefitting Technology Apprenticeship Program.
Degree & Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Pass/No Pass Only
Repeatability:	Not Repeatable

## Description

Basic concepts and skills of cutting, tacking, and welding. Instruction on the breakdown and setup of oxy-fuel rigs; making different kinds of cuts and bevels on steel plate and pipe. Instruction on take-offs and fitting up butt welded fittings on a spool. Beginning welding concepts will also be discussed. Instruction on basic positions of welding on plate.

## Course Objectives

The student will be able to:

- Set up and break down an oxy-fuel torch setup
- Explain the applications of an oxy-fuel torch; adjust the torch to the appropriate mixture of accelerant and fuel
- Understand the science and concepts behind oxy-fuel cutting
- Make different cuts on both plate and pipe, including square cuts and bevel cuts
- Fit up a variety of basic butt weld fitting, including building a complete spool
- Run stringer beads in the flat, horizontal, and vertical position on plate

## Course Content

- Set up and break down an oxy-fuel torch setup
  - Explain how to correctly set up and break down the oxy-fuel torch
  - Go over all the safety procedures involved with the torch
- The applications of the oxy-fuel torch; adjust the torch to the appropriate mixture of accelerant and fuel
  - Explain the different kinds of flames produced by the torch
  - Go over different sizing and tips of the torch, and applications of each torch tip
- Understand the science and concepts behind oxy-fuel cutting
  - Understand the chemical reaction that takes place in oxy-fuel cutting

- Go over the metallurgic change in that steel that takes place from heat
- Make different cuts on both plate and pipe, including square cuts and bevel cuts
    - Show proper technique on holding the torch
    - Show how to cut angles on both plate and pipe
  - Fit up a variety of basic butt weld fitting, including building a complete spool
    - Show how to use fit-up tools, including squares and levels
    - Explain different bevels for different welding procedures and the process of fabrication of spools
  - Run stringer beads in the flat, horizontal, and vertical position on the plate
    - Explain beginning concepts of welding
    - Show how to run stringer beads on a plate

## Lab Content

Students will work individually and in teams on a spool project. They will go through the process of figuring out their take off dimensions, making their cut lengths, and fitting up their spool. They will also begin welding stringer beads on plate.

## Special Facilities and/or Equipment

Cutting lab, weld bay, welding machines, and oxy-fuel torch.

## Method(s) of Evaluation

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

- Completion of homework/class assignments
- Completion of spool project
- Completion of welds on plate

## 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

International Pipe Trades Joint Training Committee, Inc.. [Oxy-Fuel Practices - for United Association](#). 2016.

International Pipe Trades Joint Training Committee, Inc.. [Welding - Practices & Procedures for the Pipe Trades](#). 2016.

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**

- a. Reading from Oxy-Fuel Practices - for United Association: Chapters 1-5
  - i. Exercises from textbook
  - ii. Quizzes from textbook
- b. Reading from Welding - Practices & Procedures for the Pipe Trades
  - i. Exercises from textbook
  - ii. Quizzes from textbook

## **Discipline(s)**

Steamfitting