

# APSM 103: SMQ-3 SHEET METAL TOOLS & SHOP

## Foothill College Course Outline of Record

Heading	Value
<b>Effective Term:</b>	Summer 2021
<b>Units:</b>	1.5
<b>Hours:</b>	16 lecture, 24 laboratory per quarter (40 total per quarter)
<b>Prerequisite:</b>	Per California Code of Regulations, this course is limited to students admitted to the Sheet Metal Apprenticeship Program.
<b>Degree &amp; Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	None
<b>Grade Type:</b>	Letter Grade (Request for Pass/No Pass)
<b>Repeatability:</b>	Not Repeatable

## Student Learning Outcomes

- A successful student will be able to use basic hand tools properly.
- A successful student will be able to Fabricate the following seams - Hand and machine pittsburg, standing seam, outside rectangular tap-in and corner lap.

## Description

Use of sheet metal tools, including hand tools and snips, shear, roll, and hand brake. Use of arithmetic and algebraic principles relating to sheet metal layout, fabrication of duct, pan, 45 degree tap-in, and plenum. Demonstration of other shop equipment used in the sheet metal industry.

## Course Objectives

The student will be able to:

- Demonstrate proper use of basic hand tools
- Identify common shop equipment components
- Perform proper adjustment and safe operation of basic shop equipment
- Use shop tools and equipment for basic lay out and fabrication
- Fabricate the following seams: hand and machine Pittsburgh, hem, standing seam, outside rectangular tap-in, and corner lap
- Fabricate common duct edges
- Obtain powder actuated tool use certification

## Course Content

- Proper use of basic hand tools
  - Using hand tools and snips
- Common shop equipment
  - Shear, roll, and hand brake
- Adjustment and safe operation of shop equipment
  - Demonstration of other shop equipment
- Shop tools and equipment
  - Lay out tools
  - Shop safety
  - Use pattern marking to communicate bending and forming operations

E. Hand and machine using Pittsburgh cutting equipment

- Lay out and fabricate a pan
  - Lay out and fabricate a 45 tap-in
- F. Common duct edges
- Seams, edges, and connections
  - Lay out and fabricate a duct
  - Lay out and fabricate a plenum
  - Review and testing, shop project
- G. Powder actuated tool use certification

## Lab Content

Students will work individually and in teams on fabrication of sheet metal products using sheet metal equipment. Safe working practices are reviewed.

- Equipment safety
- Fire protection
- Safe tool use
- Safe handling practices

## Special Facilities and/or Equipment

- Laboratory with sheet metal tools
- Personal protective equipment

## Method(s) of Evaluation

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

- Results of written quizzes and tests
- Shop participation
- Comprehensive written final examination
- Comprehensive final project
- Evaluation of progress by weekly assignment

## Method(s) of Instruction

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

- Discussion
- Laboratory instruction
- Demonstration

## Representative Text(s) and Other Materials

International Training Institute. [Core Sheet Metal Curriculum](#). International Training Institute for the Sheet Metal and Air Conditioning Industry (student manual and workbook). 2010.

Although this text is older than the suggested "5 years or newer" standard, it still remains a seminal text in this area of study.

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

- Reading assignment, from textbook:
  - Read Unit 2, "Seams, Locks and Edges".
- Writing assignment:

1. Complete answers to workbook questions regarding seams and edges on pages 179-181.

## **Discipline(s)**

Sheet Metal