

# APSM 121: SMQ-21 FABRICATION & SHORTCUTS

## Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2021
Units:	1
Hours:	8 lecture, 32 laboratory per quarter (40 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Sheet Metal Apprenticeship Program.
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 layout and fabricate a twisted fitting and marriage fitting.
- A successful student will be able to use layout short cut methods, OWL, slipped elbow, round eye and square-to-round.

## Description

Theory and application of sheet metal fabrication and shortcuts used in residential and commercial construction are reviewed in this course. Students will gain a working knowledge of alternative fabrication techniques and theory. Geometry and math associated with fabrication are an integral part of this course. Jobsite conditions and fabrication of specialty items are emphasized.

## Course Objectives

The student will be able to:

- Layout and fabricate specialty sheet metal items including twisted fitting, and marriage fitting with a drop check elbow, filter rack, and exhaust hood
- Use alternative lay out and fabrication short cut methods (OWL, slipped elbow, round wye, square-to-round, etc.)
- Discuss application of concepts practiced in this course for other situations

## Course Content

- Layout and fabricate specialty sheet metal items
  - Layout and fabricate a triangular twisted duct fitting
  - Demonstrate an understanding of slipping a check pattern and marriage fitting assembly techniques by fabricating the project assigned
  - Employ concepts of moisture control, fabrication sequence, and filter characteristics to design and fabricate an in-duct filter rack and housing to acceptable HVAC industry standards
  - Utilizing auxiliary views and typical hood design features, fabricate and exhaust hood
- Use alternative lay out and fabrication short cut methods and views

- OWL short cut
  - Slipped elbow short cut
  - Round wye short cuts
  - Square-to-round short cut
- C. Discuss other applications
- Effects on tolerances
  - Advantages of methods to apply

## Lab Content

Lab content includes:

- Demonstration and student practice in the use of sheet metal fabrication equipment in order to practice different fabrication techniques
- Demonstration and student practice to apply lay out methods previously learned to new challenges
- Demonstration and practice of simplified methods for certain sheet metal items
- Design elements of hoods and student practice of hood fabrication

## 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 assignments

## Method(s) of Instruction

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

- Discussion and presentation
- Laboratory
- Demonstration

## Representative Text(s) and Other Materials

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

This is the standard Sheet Metal textbook/workbook used for this course. Although it may not be within 5 years of the required published date, it is the most current book used when teaching this course.

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

- Reading assignment:
  - Review triangulation, parallel line and radial line pattern development methods
- Writing assignment:

1. Perform "OWL" field offset calculations, as assigned

## **Discipline(s)**

Sheet Metal