

# APSM 109: SMQ-9 RADIAL LINE LAY OUT & OGEE OFFSETS

## Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2021
Units:	1.5
Hours:	14 lecture, 26 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 round taper on a pitch fitting to acceptable industry standards.
- A successful student will be able to layout and fabricate an ogee offset fitting to acceptable industry standards.

## Description

Introduces a third of three traditional sheet metal pattern development methods. Concepts are applied to conical sheet metal projects. In addition, the ogee offset fitting, sometimes important in maintaining efficient air flow, is developed in flat and compound forms.

## Course Objectives

The student will be able to:

- Layout and fabricate the fittings listed using radial line development to acceptable industry standards
- Utilize the ITI industry calculator for alternative pattern lay out calculations
- Calculate shear lists and pattern fabrication data for patterns developed with radial line methods
- Apply geometric construction techniques to radial line pattern development

## Course Content

- Layout and fabricate fittings using radial line development
  - Radial line lay out
  - Round taper on a pitch
  - Radial line roof jack
  - China cap with stays and stack
  - Ogee "S" offset
  - Drop ogee offset
  - Transitional cheek drop "S" ogee offset

- Utilize the ITI industry calculator for alternative radial line pattern lay out calculations
- Calculate shear lists and pattern fabrication data for patterns developed with radial line methods
- Apply geometric construction techniques to radial line pattern development

## Lab Content

Lab content includes practice of radial line pattern development techniques and verification of calculations on real sheet metal fabrication projects using these techniques.

## 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
- Laboratory instruction
- 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:
  - Read Unit 3, pages 130-131 in the text, about applications and a description of steps followed to apply radial line development to a round tapering roof jack.
- Writing assignment:
  - Calculate diameters, circumferences, dimensions and cut sizes for various round tapered patterns.

## Discipline(s)

Sheet Metal