

# APSM 102: SMQ-2 CERTIFIED SAFETY & BEGINNING TRADE MATH

## Foothill College Course Outline of Record

Heading	Value
<b>Effective Term:</b>	Summer 2021
<b>Units:</b>	3
<b>Hours:</b>	38 lecture, 2 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 obtain OSHA 10 First Aid/CPR Certification.
- A successful student will be able to convert fractions and decimals and use in trade math problems.

## Description

Course introduces OSHA and related safety issues including job site safety, and aerial lift safety training and certification. Students will learn and apply the math skills necessary to meet the current industry standards in the construction trades. Course consists of basic arithmetic, geometry, algebra and trigonometry principles as applied in the construction trades.

## Course Objectives

The student will be able to:

- Obtain OSHA 10 safety certification
- Obtain Aerial Lift safety certification
- Apply addition, subtraction, multiplication and division fundamentals to work site trade math problems
- Solve problems using fractions, decimals, percentages, angles and formulas, demonstrating an improvement in understanding and skill level of mathematics
- Perform math problems relating to practical construction situations

## Course Content

- OSHA 10 safety certification
  - OSHA overview
  - OSHA 10 certification
- Aerial lift safety training and certification
  - Review of safety inspection items
  - Practice inspection and safe lift use
  - Aerial Lift certification testing

### C. Trade math

- Calculator usage
- Review of addition, subtraction, multiplication, division fundamentals
- Review and application of whole numbers, decimals, fractions, powers and roots, and varying units of measure
- Rounding of decimals

### D. Skill level mathematics

- Conversion of fractions to decimals; decimals to fractions
  - Conversion of measuring units, percentages, and areas/volumes with associated unit conversions
  - Establishment of ratios and single variable equations; substitution of values in equations
  - Application of various equations to practical situations
- ### E. Math problems related to construction
- Rules of equality and their use in changing equations
  - Relative parts of a right triangle and basic trigonometry theories
  - Changing and applying sine, cosine, and tangent formulas for practical situations
  - Calculation of shear lists for sheet metal fabrication
  - Review and testing

## Lab Content

Students will work individually and in teams on fabrication of sheet metal products using sheet metal equipment. In this course, students will practice and review:

- Equipment, environmental, and material safety, as required by OSHA 10
- Aerial life safety practices, as required for certification
- Safe handling practices of materials

## 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:

- Demonstrated mastery of course topics as measured by the results of written quizzes, tests, and lab practicals
- Demonstrate appropriate mechanical skills through shop participation
- Comprehensive written final examination
- Comprehensive final project
- Maintenance of a detailed workbook of students' daily work activities on core competencies

## 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. Sheet Metal Math, International Training Institute for the Sheet Metal and Air Conditioning Industry (student manual and workbook). 2007.

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**

A. Reading assignment, from textbook:

1. Read in Unit 3 about "Equations on the Job"

B. Writing assignment, from textbook:

1. Convert various given examples of formulas and solve problems as presented on pages 3.3 to 3.5

## **Discipline(s)**

Sheet Metal