

APSM 123: SMQ-23 RESIDENTIAL SHEET METAL

Foothill College Course Outline of Record

| Heading | Value |
|-------------------------|--|
| Effective Term: | Summer 2021 |
| Units: | 2 |
| Hours: | 18 lecture, 22 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 identify common types of residential HVAC systems.
- A successful student will be able to properly install furnaces, thermostat, flues, vents, and air conditioning components per applicable code and Title 24 requirements.

Description

Introduction to sheet metal work specific to residential construction including: the various types of residential heating, ventilation and air conditioning systems, combustion theory, basic air distribution, furnace construction, filters, humidifiers, installation techniques, maintenance procedures and roof drainage system requirements.

Course Objectives

The student will be able to:

- Identify various types of sheet metal work specific to residential construction
- Name and identify the structural components of residential construction
- Identify common types of residential HVAC systems
- Identify buy-out items used in residential duct and roof drainage systems
- Identify common residential HVAC equipment and typical applications
- Properly install furnaces, thermostats, flues, vents, and air conditioning components per code requirements
- Compare new construction to retrofit installation

Course Content

- Identify various types of sheet metal work specific to residential construction
 - Kitchen and bath exhaust
 - Heating and cooling systems
 - Architectural sheet metal
 - Drainage and moisture control systems

- Name and identify the structural components of residential construction
 - Residential framing nomenclature
 - Bearing and shear walls
 - Foundation and framing allowances for sheet metal work
- Identify common types of residential HVAC systems
 - Split or package systems
 - Basic or zone control systems
- Identify buy-out items used in residential duct and roof drainage systems
 - Duct components
 - Roof drainage and moisture control components
- Identify common residential HVAC equipment and typical applications
 - Furnaces
 - Air conditioning equipment
 - Filtration equipment
 - Humidification and de-humidification equipment
 - Controls
- Properly install furnaces, thermostats, flues, vents, and air conditioning components per code and manufacturer requirements
- Compare new construction to retrofit installation
 - Applicable codes and standards

Lab Content

Students will work together in teams and individually. Lab content includes:

- Hands-on experience of techniques specific to residential sheet metal installation
- Students practice gas-piping and fabrication of residential duct fittings
- Students learn how to calculate for the installation of furnaces and flues and practice installation

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. Residential HVAC Finish Installer, International Training Institute for the Sheet Metal and Air Conditioning Industry (student manual and workbook). 2007.

International Training Institute. Residential HVAC New Construction Installer, International Training Institute for the Sheet Metal and Air Conditioning Industry (student manual and workbook). 2007.

International Training Institute. Residential HVAC Retrofit Technician, International Training Institute for the Sheet Metal and Air Conditioning Industry (student manual and workbook). 2007.

These are the standard Sheet Metal textbooks/workbooks used for this course. Although one or more may not be within 5 years of the required published date, they are the most current books 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 Module 3, Unit 2, HVAC System Components

B. Writing assignment, from textbook:

1. Complete Module 3, Unit 2 "Knowledge Check" review sheets, pages 1.22 and 1.23

Discipline(s)

Sheet Metal