

APSM 153A: FIELD INSTALLATION FOR THE SERVICE TECHNICIAN

Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2022
Units:	2.5
Hours:	30 lecture, 10 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 describe various connections for typical HVAC "package" air conditioning equipment.
- A successful student will be able to list basic "start up" procedures for an HVAC system.

Description

Students establish basic steps for installation and start-up of HVAC systems.

Course Objectives

The student will be able to:

- Understand the process of field installation
- Understand the equipment installation requirements overview (as per SMACNA standard, code requirements, and manufacturer's requirements)
- Find and perform penetration layout
- Understand the requirements of curb installation
- Understand the fire and smoke dampers installation overview as per code and manufacturer's requirements
- Understand the procedures of equipment start-up
- Achieve crane and rigging qualification
- Practice aerial lift safety

Course Content

- Field installation
 - List three crafts involved with air conditioning installation (Lec and Lab)
 - Identify types of duct system installations (Lec and Lab)
 - Describe the installation of metal duct (Lec and Lab)

- Describe the installation of duct board systems (Lec and Lab)
 - Describe the installation of flexible duct (Lec and Lab)
- Equipment installation requirements overview (as per SMACNA standard, code requirements, and manufacturer's requirements)
 - Describe split air conditioning system installation (Lec and Lab)
 - Penetration layout (Lec and Lab)
 - Curb installation
 - Recognize good installation practices for packaged air conditioning equipment (Lec and Lab)
 - Discuss different connections for packaged air conditioning equipment (Lec and Lab)
 - Fire and smoke dampers installation overview as per code and manufacturer's requirements (Lec and Lab)
 - Equipment start-up
 - Recognize correct refrigeration piping practices (Lec and Lab)
 - State start up procedures for air conditioning equipment (Lec and Lab)
 - Crane and rigging qualification (Lec and Lab)
 - Aerial lift safety (Lec and Lab)

Lab Content

- Observe and practice installation demonstrations on lab equipment
- Demonstrate proper techniques to achieve crane and rigging safety certification

Special Facilities and/or Equipment

- Laboratory with sheet metal service tools
- Personal protective equipment
- When taught via Foothill Global Access, on-going access to computer with email software and hardware; email address

Method(s) of Evaluation

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

- Results of written quizzes and tests
- Responses in class discussions
- Comprehensive written final examination
- Demonstration of assigned skills to acceptable level per instructor

Method(s) of Instruction

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

- Lecture
- Discussion
- Demonstration
- Lab assignments followed by discussion

Representative Text(s) and Other Materials

Whitman, B., B. Johnson, J. Tomczyk, and E. Silberstein. [Refrigeration and Air Conditioning Technology, 8th ed.](#) 2016.

Auvil, Ronnie J.. [HVAC Controls Systems, 4th ed.](#) 2017.

These are the standard sheet metal textbooks/workbooks used for this course. Although one or more may not be within five 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. Sample reading assignment: From the Refrigeration and Air Conditioning Technology textbook, read Unit 38, "Installation"
- b. Sample writing assignment: Answer review questions related to assigned reading

Discipline(s)

Sheet Metal or Air Conditioning, Refrigeration, Heating