APSM 172C: DUCT LEAKAGE TESTING

Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2022
Units:	2
Hours:	28 lecture, 12 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 calculate surface area of a duct test session.
- A successful student will be able to properly perform a duct leakage test on sample duct system.

Description

Students will gain an overview of the various methods of duct leakage testing, per requirements applied in the commercial HVAC industry.

Course Objectives

The student will be able to:

1. Define duct leakage testing
2. Identify commonly used leakage standards
3. Identify common components used in duct leakage testing
4. Demonstrate the proper use of testing equipment
5. Define duct pressure and sealant class
6. Calculate surface area of a duct test section
7. Document required information on a leakage test report
8. Describe usage procedure for a duct leakage test kit
9. Demonstrate methods of identifying duct leaks
10. Properly seal duct leaks
11. Properly perform a duct leakage test on sample duct system

Course Content

1. Define duct leakage testing
   a. Define the process and methodology of duct leakage testing (Lec)
2. Identify commonly used leakage standards
   a. Describe the SMACNA duct leakage testing methodology (Lec and Lab)
   b. Describe the percent of total flow duct leakage testing methodology (Lec and Lab)
   c. Describe the HERS/Title 24 duct leakage testing methodology (Lec and Lab)
   d. Discuss the roles and responsibilities of designers, technicians and contractors (Lec and Lab)
3. Identify common components used in duct leakage testing
   a. Describe components in a duct leakage test kit (Lec and Lab)
4. Demonstrate the proper use of testing equipment
   a. Properly connect a duct leakage test kit to a sample duct test section (Lec and Lab)
5. Define duct pressure and sealant class
   a. Define pressure, sealant and leakage class per SMACNA (Lec and Lab)
6. Calculate surface area of a duct test section
   a. Calculate the surface area of a given duct test section (Lec and Lab)
7. Document required information on a leakage test report
   a. Complete a sample test report from sample drawing and information sheet (Lec and Lab)
8. Describe usage procedure for a duct leakage test kit
   a. Properly conduct a positive pressure duct leakage test on a sample duct section (Lec and Lab)
   b. Properly conduct a negative pressure duct leakage test on a sample duct section (Lec and Lab)
9. Demonstrate methods of identifying duct leaks
   a. Demonstrate methods of determining duct leak locations (Lec and Lab)
   b. Demonstrate visual smoke test methods (Lec and Lab)
10. Properly seal duct leaks
    a. Describe sealants used in HVAC duct construction (Lec and Lab)
    b. Demonstrate ways of properly sealing duct leaks (Lec and Lab)
11. Properly perform a duct leakage test on sample duct system (Lec and Lab)

Lab Content

1. Properly conduct a positive pressure duct leakage test on a sample duct section
2. Properly conduct a negative pressure duct leakage test on a sample duct section
3. Demonstrate methods of determining duct leak locations
4. Demonstrate visual smoke test methods

Special Facilities and/or Equipment

1. Laboratory with sheet metal test and balance tools and sample system components
2. Personal protective equipment
3. 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
Comprehensive final project
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

International Training Institute for the Sheet Metal and Air Conditioning Industry. Testing, Adjusting & Balancing of Environment Systems. 2003.

This is the standard sheet metal textbook/workbook used for this course. Although it may not be within five 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

1. Sample reading assignment: From the textbook, read section on duct leakage testing
2. Sample writing assignment: Calculate the surface area of a given duct test section

Discipline(s)

Sheet Metal