APSM 171A: HVAC TRADE HISTORY & INTRODUCTION TO TESTING, ADJUSTING & BALANCING

Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2022
Units:	3
Hours:	36 lecture, 4 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 industry partners and stake holders (SMART, SMACNA, ASHRAE, TABB) and briefly describe their histories and roles in the industry.
- A successful student will be able to identify common HVAC test, adjust and balance instruments and their applications.

Description

Students will gain an introductory overview of TAB in the HVAC industry. Students will be able to describe human comfort and HVAC industry process needs.

Course Objectives

The student will be able to:

1. Describe the evolution of HVAC in buildings
2. Describe job skills needed in HVAC fabrication, installation, servicing and testing
3. Describe history and role of SMART, SMACNA, ASHRAE, TABB
4. Identify common TAB instruments and their applications
5. Identify and perform mathematical functions used in the TAB industry

Course Content

1. Describe the evolution of HVAC in buildings
   a. Describe human comfort needs (Lec)
   b. Describe industry HVAC process needs (Lec)
   c. Describe processes to control humidity, temperature, pressure, noise (Lec)
2. Describe job skills needed in HVAC fabrication, installation, servicing and testing
   a. Discuss various work processes in the sheet metal/HVAC industry (Lec)
   b. Discuss skills required to perform work processes in the trade (Lec)
3. Describe history and role of SMART, SMACNA, ASHRAE, TABB
   a. Describe industry partners and stake holders (SMART, SMACNA, ASHRAE, TABB) and their histories and roles (Lec)
4. Identify common TAB instruments and their applications
   a. Display common instruments used in the TAB industry (Lec and Lab)
   b. Describe precision, accuracy, digital and analog parallax and calibration (Lec and Lab)
   c. Describe and demonstrate usage of common TAB instruments in lab (Lec and Lab)
   d. Discuss safety issues when using instruments (Lec and Lab)
5. Identify and perform mathematical functions used in the TAB industry
   a. Demonstrate and review basic mathematical functions, fractions, decimals, ratios and equations (Lec and Lab)
   b. Describe and demonstrate common equations and formulas used in the TAB industry (Lec and Lab)
   c. Demonstrate ITI calculator and describe common functions (Lec and Lab)

Lab Content

1. Demonstration and use of test and balance specialized tools and meters
2. Demonstration of typical components

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:

Demonstrated mastery of course topics as measured by the results of written quizzes and tests
Responses in class discussions
Comprehensive written final examination

Method(s) of Instruction

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

Lecture
Discussion
Demonstration

Representative Text(s) and Other Materials

International Training Institute. Testing, Adjusting & Balancing of Environmental Systems. 2003.

International Training Institute. Sheet Metal Math, 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 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

1. Sample reading assignment: From the textbook, introductory chapter
2. Sample writing assignment: Complete assigned math calculations

Discipline(s)

Sheet Metal