APSM 178A: INDOOR AIR QUALITY

Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2025
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 describe specialized IAQ instruments used in IAQ studies.
- A successful student will be able to describe the evolution and need for increased building envelope integrity.

Description

Students will explain basic factors of air quality, demonstrate the use of indoor air quality test instruments, and perform various tests to prepare a sample IAQ report.

Course Objectives

The student will be able to:

1. Describe the history and evolution of building indoor air quality (IAQ) issues
2. Describe the instruments used in IAQ audits
3. Describe the strategies used in performing IAQ audits
4. Identify common IAQ issues in buildings
5. Demonstrate the use of instruments to perform IAQ readings
6. Prepare a sample IAQ report

Course Content

1. Describe the history and evolution of building indoor air quality (IAQ) issues
   a. Describe the evolution and need for increased building envelope integrity (Lec)
   b. Describe the impact of build envelope integrity to indoor air quality issues (Lec)
2. Describe the instruments used in IAQ audits
   a. Describe the standard air balance instruments that can be used in IAQ studies (Lec and Lab)
   b. Describe specialized IAQ instruments used in IAQ studies (Lec and Lab)
3. Describe the strategies used in performing IAQ audits
   a. Describe strategies to perform a basic IAQ audit (Lec)
   b. Describe strategies to perform an intermediate IAQ audit (Lec)
   c. Describe strategies to perform a comprehensive IAQ audit (Lec)
4. Identify common IAQ issues in buildings
   a. Identify the most common sources of building IAQ issues (Lec and Lab)
   b. Describe possible solutions for IAQ issues (Lec and Lab)
   c. Describe various resources to find chemical exposure limits for building occupants (Lec and Lab)
5. Demonstrate the use of instruments to perform IAQ readings
   a. Demonstrate the use of an air data multi meter and thermometer to determine outside air percentage (Lab)
   b. Demonstrate the use of a CO2 meter (Lab)
   c. Demonstrate the use of a VOC meter (Lab)
   d. Demonstrate the use of a sampling tube pump (Lab)
6. Prepare a sample IAQ report
   a. Prepare a sample request for proposal for an IAQ audit (Lec and Lab)
   b. Prepare a sample IAQ audit report (Lec and Lab)

Lab Content

1. Demonstrate the use of an air data multi meter and thermometer to determine outside air percentage
2. Demonstrate the use of a VOC meter
3. Demonstrate the use of a sampling tube pump

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
Demonstration of assigned skills to acceptable level per instructor
Comprehensive final project

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. HVAC. 2005.

Sheet Metal and Air Conditioning Contractors National Association. Indoor Air Quality: A Systems Approach, 3rd ed.. 1998.

American Society of Heating, Refrigeration and Air Conditioning Engineers. ANSI/ASHRAE Standard 62.1-2016 Ventilation for Acceptable Indoor Air Quality. 2016.

These are the standard Sheet Metal textbooks/workbooks used for this course. Although they are older than 5 years, they are the most current editions available.

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

1. Sample reading assignments: From the textbooks, readings on ITI Indoor Air Quality (IAQ); readings on SMACNA
2. Sample writing assignment: Prepare a sample IAQ audit report

Discipline(s)

Sheet Metal