

# APSM 176A: PLANS & SPECIFICATIONS, CODES & STANDARDS

## Foothill College Course Outline of Record

Heading	Value
<b>Units:</b>	2.5
<b>Hours:</b>	30 lecture, 10 laboratory per quarter (40 total per quarter)
<b>Prerequisite:</b>	Per California Code of Regulations, this course is limited to students admitted to the Sheet Metal Apprenticeship Program.
<b>Degree &amp; Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	None
<b>Grade Type:</b>	Letter Grade (Request for Pass/No Pass)
<b>Repeatability:</b>	Not Repeatable

## Student Learning Outcomes

- A successful student will be able to describe the legal application of plans and specifications, codes and standards.
- A successful student will be able to describe the building codes that impact TAB.

## Description

Students will explain the organization of construction documentation specifications and plans used in the TAB HVAC industry. Students will prepare a TAB bid estimate, per standards used in the TAB industry.

## Course Objectives

The student will be able to:

- Describe the legalities of plans and specifications, codes and standards
- Describe flexible and inflexible specifications
- Describe the purpose of an RFI and properly prepare an RFI and change order
- Explain the organization of construction specifications
- Define the HVAC and TAB related sections in a building specification
- Describe and prepare a "take off" list for a sample TAB project
- Describe and prepare a "submittal" for a sample TAB project
- Describe the building codes that impact TAB
- List the ASHRAE standards that have direct impact to TAB
- List the SMACNA standards that have direct impact to TAB
- List the industry standards and certifications that have direct impact to TAB

## Course Content

- Describe the legal importance of plans and specifications, codes and standards
  - Describe the terms: plans, specifications, codes, standards (Lec)
  - Describe the legal importance of plans, specifications, codes, standards (Lec)

- Describe flexible and inflexible specifications
  - Define the difference of flexible and inflexible specifications (Lec)
  - Identify examples of flexible and inflexible specifications from sample specifications (Lec)
- Describe the purpose of an RFI and properly prepare an RFI and change order
  - Define an RFI and its purpose (Lec)
  - Prepare a sample RFI and associated change order (Lec and Lab)
- Explain the organization of construction specifications
  - Describe the layout format of building specifications (Lec)
  - Define the importance and demonstrate an example of documenting revisions (Lec and Lab)
- Define the HVAC and TAB related sections in a building specification
  - Define the specification sections that relate to HVAC and TAB (Lec)
- Describe and prepare a "take off" list for a sample TAB project
  - Describe the process to create a job take off (Lec)
  - Prepare a sample TAB job take off from sample plans and specifications (Lec and Lab)
- Describe and prepare a "submittal" for a sample TAB project
  - Describe the process to create or obtain submittals (Lec)
  - Prepare a sample TAB submittal from sample plans and specifications (Lec and Lab)
- Describe the building codes that impact TAB
  - Describe the building, mechanical, green, fire and life safety codes that impact TAB work (Lec)
- List the ASHRAE standards that have direct impact to TAB
  - Define the ASHRAE standards that impact TAB work (Lec)
  - Describe the importance and impact of the ASHRAE 62 ventilation standards (Lec)
  - Describe the importance and impact of the ASHRAE 111 TAB standards (Lec)
- List the SMACNA standards that have direct impact to TAB
  - Describe the SMACNA standards that impact TAB work (Lec)
- List the industry standards and certifications that have direct impact to TAB
  - Compare and contrast the three main certifying agencies for the TAB industry (Lec)
  - Describe other specialty certifications offered by TABB, AABC and NEBB (Lec)
  - Describe other industry certifications, such as NSF49, NAFA, EPA 608 (Lec)
  - Describe CDC, OSHA, ISO and FS209E and other government standards (Lec)

## Lab Content

- Locate TAB related data in the plans and specifications for a building.
- Compare data from existing components with plans and specifications design data.

## Special Facilities and/or Equipment

- Laboratory with sheet metal test and balance tools and sample system components
- Personal protective equipment

## Method(s) of Evaluation

- Results of written quizzes and tests
- Responses in class discussions
- Comprehensive written final examination
- Comprehensive final project

## Method(s) of Instruction

- A. Lecture
- B. Discussion
- C. Demonstration
- D. 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. Alexandria, VA: International Training Institute, 2003.

International Training Institute for the Sheet Metal and Air Conditioning Industry. HVAC. Alexandria, VA: International Training Institute, 2005.

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

NOTE: 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. Sample reading assignment: From the textbook, assigned sections on ASHRAE Standard 62.1.

B. Sample writing assignment: Describe the importance and impact of ASHRAE 62 ventilation standards on HVAC systems TAB requirements.

## Discipline(s)

Sheet Metal