

PALOMAR COLLEGE  
COURSE OUTLINE OF RECORD FOR  
DEGREE CREDIT COURSE

Transfer course       A.A. degree applicable course

(check all that apply)

**COURSE NUMBER AND TITLE:** AP SM 104 - Intermediate Processes

**UNIT VALUE:** 4

**MINIMUM NUMBER OF SEMESTER HOURS:** 96

**BASIC SKILLS REQUIREMENTS:**

Appropriate language and computational skills.

**ENTRANCE REQUIREMENTS**

**PREREQUISITE:** Apprenticeship Sheet Metal 103.

**COREQUISITE:** None.

**RECOMMENDED PREPARATION:** None.

**SCOPE OF COURSE:**

A continuation of Intermediate Processes with more complex and advanced techniques to be used. CSU

**SPECIFIC COURSE OBJECTIVES:**

The student will be able to:

1. Understand and apply local, state and federal safety rules and regulations to specific job sites.
2. Recite the advantages of pursuing a career as a skilled craftsman in the sheet metal trade.
3. Explain trade terms, use of tools and materials and the fundamental processes of sheet metal work.
4. Apply the basic principles of layout, construction, fabrication and maintenance as related to the sheet metal industry.

**CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE:**

- I. Service Work
  - A. Heat Transfer in Furnace
  - B. Types of Furnaces
  - C. Basic Electricity
  - D. Low Voltage and Millivolt Burner Controls

- II. Field Installation
  - A. Moving Heavy Equipment
  - B. Safety on the Job
  - C. Duct Hangers
  - D. Planning a Duct Job
  
- III. Architectural Sheet Metal
  - A. Material of Architectural Sheet Metal
  - B. Seams and Locks
  - C. Gutter and Gutter Design
  - D. Flashings and Cornices
  - E. Siding
  - F. Roofing and Decking
  - G. Ventilators
  
- IV. Safety
  - A. Fire Hazards
  - B. Fire Codes
  
- V. Blueprint Reading, Drafting and Sketching
  - A. Introduction
  - B. The Parts of a Set of Blueprints
  - C. Scale and Lines
  - D. Orthographic Projection
  - E. Terminology in Wood Frame Construction
  
- VI. Residential Heating and Air Conditioning
  - A. Types of Residential Sheet Metal Work
  - B. Working for a Client
  - C. Cutting Holes for Equipment
  - D. Working Around Electricity
  - E. Piping

**REQUIRED READING:**

Schumacker, Fred and Claude Zinngrabe. Sheet Metal Workers Pocket Manual 1. Alexandria, Virginia: National Training Fund for the Sheet Metal and Air Conditioning Industry, 1988.

Sheet Metal Apprentice Textbook 2. 3rd Edition. Alexandria, Virginia: National Training Fund for the Sheet Metal and Air Conditioning Industry, 1995.

Sheet Metal Apprentice Workbook 2. 3rd Edition. Alexandria, Virginia: National Training Fund for the Sheet Metal and Air Conditioning Industry, 1995.

**SUGGESTED READING:**

Meyer, Leo. Sheet Metal Shop Practice. 4th Edition. Homewood, Virginia: American Technical Publishers, 1989.

Shaeffer, Ralph. Calculator Layout-The Numerical Concept, Volumes I & II. Portland, Oregon: Ralmar Press Publications, 1983.

Sheet Metal Workers Journal.

Snips Magazine.

**REQUIRED WRITING:**

The student shall complete a set of plans suitable for the manufacture of a project. A list of materials and all mathematical specifications shall accompany the plans. Student will complete various projects using mathematical skills and problem solving exercises as assigned. Minimum two pages for each set of plans.

**OUTSIDE ASSIGNMENTS:**

Students are expected to spend a minimum of three hours per unit per week in class and on outside assignments, prorated for short term classes.

Readings from the text, related materials and completion of project and workbook assignments.

**INSTRUCTIONAL METHODOLOGY:**

Check all that apply:

- lecture
- laboratory
- lecture-laboratory combination
- directed study

This course may be offered as a distance education course and meets Title 5 regulations 55370, 55372, 55374, 55376, 55378, and 55380.

Yes  No

If yes, check all that apply. (See guidelines for preparation for definitions.)

- telecourse
- mediated instruction
- computer assisted instruction

**GRADING POLICY AND STANDARDS** (include methods of determining whether the stated objectives have been met by students):

16%	Written/Workbook Assignments	A = 100-90
42%	Lab Projects	B = 89-80
42%	Exams	C = 79-70
		F = below 70

**IS COURSE REPEATABLE FOR REASON(S) OTHER THAN DEFICIENT GRADE?**

Yes  No  Number of times course may be taken for credit: 2.

If yes, identify specific provision of Title 5 Division 2 section(s) 55761-55763 and 58161 which qualifies course as repeatable: 58161-1-C

**CONTACT PERSON:** Director, Vocational Programs, Ext. 2286