

SOUTHEAST COMMUNITY COLLEGE
CONSTRUCTION MANUFACTURING AND TECHNOLOGY DIVISION
Heating, Ventilation, Air Conditioning & Refrigeration Technology Program
Revision Date: August 2025

I. CATALOG DESCRIPTION

Course Number: HVAC1336
Course Title: Sheet Metal Fabrication
Prerequisite(s): None
Catalog Description: Laboratory application to pattern development and fabrication of sheet metal fittings used in the HVAC/R industry. Layout techniques include radial line development and triangulation.

Credit Hours: 2
Class Hours: 0
Lab Hours: 90
Total Contact Hours: 90

II. COURSE OBJECTIVES: *Course will:*

- A. Describe sheet metal fabrication equipment such as the Pittsburgh, 4' and 8' brakes, foot shear, etc.
- B. Identify sheet metal fabrication hand tools and proper use.
- C. Display how to draw the fittings on paper and then transfer that drawing to a layout on metal.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

- A. Student Learning Outcomes: *Student will be able to:*
 - 1. Identify safe work practices when fabricating sheet metal fittings used in the HVAC industry.
 - 2. Recognize and practice the proper operational procedures used when handling sheet metal fabrication equipment and tools.
 - 3. Display knowledge of the different sheet metal and ductwork fittings used in air distribution systems.
 - 4. Explain the principles and procedures to properly layout and fabricate duct and fittings used in air distribution systems.
- B. General Education Learning Outcomes (GELOs)
 - 1. GELO #3: Critical Thinking & Problem Solving
 - Outcome 5: Acquire and integrate knowledge and construct relationships across disciplines.

IV. CONTENT/TOPICAL OUTLINE

- A. Safety in the Sheet Metal Shop
- B. Proper use of sheet metal tools and machinery
- C. Sheet Metal Types
- D. Pattern Layout
- E. Folding Edges & Making Seams
- F. Forming, Crimping, Beading & Grooving
- G. Parallel Line and Radial Line Development
- H. Triangulation

V. INSTRUCTIONAL MATERIALS

- A. Required Text(s): Budzik, Richard S., *Today's 40 Most Frequently Used Fittings*
- B. Supplies: Drawing board, Drafting T-square, 30-60-90 triangle and Extension beam compass set

VI. METHODS OF PRESENTATION/INSTRUCTION

- A. Methods of presentation typically include a combination of the following:
 - 1. Hands-on lab projects
 - 2. Lab demonstrations
 - 3. Lab assistance
 - 4. Instructional handouts

VII. METHODS OF EVALUATION

- A. Methods of evaluation, although determined by the individual instructor, traditionally includes a combination of the following:
 - 1. Tests
 - 2. Quizzes
 - 3. Lab Projects

VIII. SPECIFIC COURSE REQUIREMENTS

- A. Student must meet all of the following to receive a passing grade:
 - 1. Submit own work. Students turning in homework, reports, field notes, or calculations by someone other than themselves will receive 0% and be referred to the Division Dean and Dean of Students for further disciplinary action. Consequences can include failing the course.
 - 2. Demonstrate attitude, skills, and character commensurate with industry standards.
 - 3. All program policies of the Heating, Ventilation, Air Conditioning, & Refrigeration Technology program will be strictly enforced.