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

I. CATALOG DESCRIPTION

Course Number:	HVAC1331
Course Title:	Manual J/Manual D
Prerequisite(s):	None
Catalog Description:	Calculating heat loss/heat gain on residential structures in accordance with ACCA Manual J. Design/layout using ACCA Manual D of heating/air conditioning systems, equipment selection, air distribution, print reading and mechanical code requirements.
Credit Hours:	3.0
Class Hours:	30
Lab Hours:	45
Total Contact Hours:	75

II. COURSE OBJECTIVES: *Course will:*

A. Examine a blueprint for a residential structure and determine the types of construction material used.
B. Calculate the heat loss and heat gain of the structure using ACCA's Manual J.
C. Describe the proper type of duct system and materials for various types of residential construction.
D. Identify heating and cooling to provide adequate comfort conditions.
E. Outline the information related to blower performance, static pressure, friction rate, room CFM and duct flow rates in making acceptable decisions regarding system design.
F. Examine IMC 2012 edition. (International Mechanical Code)

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

A. Student Learning Outcomes: *Student will be able to:*
- **1.** Analyze a blueprint for and determine different types of materials and construction used on residential applications.
- **2.** Calculate the heat loss and heat gain of the structure using ACCA's Manual J and the Manual J forms.
- **3.** Determine the proper size and material needed for different duct designs.
- **4.** Determine the proper size of equipment and select different types of systems.
- **5.** Prepare the information related to blower performance and all other factors using the blower performance charts of different manufacturers.
- **6.** Prepare a Manual D worksheet using manufacturer's data and Manual D book.
- **7.** Interpret IMC 2012 edition. (International Mechanical Code)

B. General Education Learning Outcomes (GELOs)
- **1.** GELO #3: Critical Thinking & Problem Solving
  Outcome 1: Collect, identify, interpret and analyze data.

IV. CONTENT/TOPICAL OUTLINE

A. Design Conditions for Residential Load Calculations
B. Building Heat Loss & Heat Gains
C. System Heat Loss & Heat Gains
D. Ventilation Air Requirements

E. Combustion Air Requirements
F. Residential Air Distribution
G. Types of Duct Systems
H. Equipment & Air Side Devices
I. Blower Performance
J. Pressure Drop & Friction Rate
K. Velocity Limits & Air Flow Rates
L. Heating & Cooling CFM Requirement Selecting Fan Speeds
M. Supply Side Sizing (branch & trunk)
N. Return Side Sizing (branch & trunk)
O. Duct Leakage & System Interaction
P. Mechanical Codes
Q. Blue print reading

V. INSTRUCTIONAL MATERIALS

A. Required Text(s):
1. Air Conditioning Contractor of America, *Manual J and J-1 Forms*
2. Air Conditioning of America, *Manual D and D Forms,* and 2012 IMC book

B. Supplies:
1. ACCA Duct Calculator
2. Architect's scale
3. Calculator
4. Drafting Board
5. T-square
6. 30/60/90 triangle

VI. METHODS OF PRESENTATION/INSTRUCTION

A. Methods of presentation typically include a combination of the following:
1. Lectures
2. Classroom demonstrations
3. Classroom discussions
4. Instructional handouts
5. Video presentations
6. PowerPoint presentations

VII. METHODS OF EVALUATION

A. Methods of evaluation, although determined by the individual instructor, traditionally includes a combination of the following:
1. Reading Assignments from Manual J and Manual D
2. Worksheets using J-1 forms and D forms
3. Quizzes
4. Final exam
5. Projects
6. Homework

VIII. SPECIFIC COURSE REQUIREMENTS

A. Student must meet all of the following to receive a passing grade:
1. Achieve a passing grade of "D" (60%) or higher, based on SCC grading scale
2. 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.

3. Demonstrate attitude, skills, and character commensurate with industry standards.