

SOUTHEAST COMMUNITY COLLEGE
CONSTRUCTION MANUFACTURING AND TECHNOLOGY DIVISION
Design & Drafting Technology Program
Revision Date: August 22, 2022

I. CATALOG DESCRIPTION

Course Number: DDRT1320
Course Title: Heating and Air Conditioning Systems II
Prerequisite(s): DDRT1120 and DDRT1207
Catalog Description: Methods of sizing residential ductwork systems according to ACCA Manual D. Equipment selection is covered in course. The course covers the production of ductwork systems for residential applications. Calculations are based on DDRT1207 information.

Credit Hours: 3
Class Hours: 23
Lab Hours: 68
Total Contact Hours: 91

II. COURSE OBJECTIVES: *Course will:*

- A. Introduce symbols and procedures associated with the residential HVAC industry.
- B. Allow a better understanding of the information and calculations needed to produce a set of engineering drawings in the construction field.
- C. Produce drawings according to industry standards.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

- A. Student Learning Outcomes: *Student will be able to:*
 - 1. Identify key terms used in designing a duct system
 - 2. Select an appropriate type of duct system for a given structure.
 - 3. Select properly sized heating and air conditioning equipment.
 - 4. Select the correct blower speed for both heating and cooling.
 - 5. Calculate the pressure loss for all components of an air distribution system
 - 6. Calculate the friction rate to be used to design the system.
 - 7. Calculate proper system CFM.
 - 8. Calculate correct airflow to each room of a residence.
 - 9. Select correctly sized supply air registers/diffusers and return air grilles.
 - 10. Correctly size trunk ducts and branch ducts.
 - 11. Design a heating/air conditioning system using ACCA Manual "D" and "D" forms.
 - 12. Identify and use the HVAC symbols associated with the construction field.
 - 13. Layout supply and return diffusers for residential structures.
 - 14. Design and layout ductwork systems for residential structures.
 - 15. Design and layout heating system components for residential structures.
 - 16. Produce HVAC drawings compatible with industry standards.
 - 17. Make changes as required by alterations in the building design.
 - 18. Letter drawing using correct procedures, fonts and size.
- 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. Residential air distribution systems.

- B. Equipment and air side devices.
- C. Basic design principles.
- D. Duct system layout.
- E. Duct sizing calculations.
- F. Noise issues.
- G. Testing and balancing.
- H. Handout drawing #1
- I. House project #1
- J. House project #2
- K. House project #3
- L. House project #4

V. INSTRUCTIONAL MATERIALS

- A. Required Text(s):
 - 1. ACCA Manual D, (Refer to CID and/or instructor for current edition)
 - 2. D forms
- B. Other Materials: Trane® Ductulator
- C. Other Resources: J-1 forms from DDRT1207

VI. METHODS OF PRESENTATION/INSTRUCTION

- A. Methods of presentation typically include a combination of the following:
 - 1. Lecture
 - 2. Classroom discussion
 - 3. Videos

VII. METHODS OF EVALUATION

- A. Methods of evaluation, although determined by the individual instructor, traditionally includes a combination of the following:
 - 1. Attendance and participation
 - 2. Daily assignments
 - 3. Written exams and/or quizzes
 - 4. Performance and observational assessment

VIII. SPECIFIC COURSE REQUIREMENTS

- A. Students must meet all of the following:
 - 1. Achieve passing grade of 60% or higher, based on SCC grading scale.
 - 2. Submit own work. Students turning in calculations or homework by someone other than themselves will receive a grade of 0% and will be referred to the Dean of Students for further disciplinary action.