

SOUTHEAST COMMUNITY COLLEGE
CONSTRUCTION MANUFACTURING AND TECHNOLOGY DIVISION
Heating, Ventilation, Air Conditioning & Refrigeration Technology Program
Revision Date: August 26, 2019

I. CATALOG DESCRIPTION

Course Number: HVAC2610
Course Title: HVAC Troubleshooting
Prerequisite(s): HVAC1461
Catalog Description: Theory and lab application of operating and service of residential and light commercial heating, A/C and heat pump equipment along with interactive computer programs to acquire experience with wiring, function, operation and troubleshooting various systems.
Credit Hours: 3
Class Hours: 30
Lab Hours: 45
Total Contact Hours: 75

II. COURSE OBJECTIVES: *Course will:*

- A. Describe heating and cooling operational checks.
- B. Outline troubleshooting using a systematic approach.
- C. Discuss performing servicing procedures.
- D. Interpret schematic or ladder diagram of SCC Training Panels showing the logic of operation.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

- A. Student Learning Outcomes: *Student will be able to:*
 - 1. Evaluate, analyze, and demonstrate the proper steps to perform heating and cooling operational checks.
 - 2. Perform the proper steps in troubleshooting residential HVAC equipment using a systematic approach.
 - 3. Analyze wiring diagrams to properly control and troubleshoot different types of residential HVAC equipment.
 - 4. Demonstrate ability to rebuild, startup, test, and correct the efficiency of different types of furnaces and to properly install, recover, evacuate and recharge air conditioning systems.
 - 5. Show troubleshooting skills to diagnose and repair HVAC equipment using proper tools and equipment.
- 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. Simutech Computer Programs
- B. SCC Training Panels creating and reading schematic or ladder diagrams
- C. Hampden Fault Simulators
- D. Troubleshooting
- E. Air Conditioning operation
- F. Furnace Operation
- G. Heat Pump Operation

V. INSTRUCTIONAL MATERIALS

- A. Required Text(s): *DuPoint Troubleshooting Techniques*
- B. Other Resources: Prior Semesters' Notes, SCC Training Panels and Hampden Fault Simulators
- C. Supplies: Tools required by the HVAC Program

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. Lab Projects
 - 2. Test
 - 3. Quizzes

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.