

SOUTHEAST COMMUNITY COLLEGE
TRANSPORTATION DIVISION
JOHN DEERE CONSTRUCTION & FORESTRY EQUIPMENT TECH
COURSE SYLLABUS
January 26, 2023

I. CATALOG DESCRIPTION

Course Number: JDCE1240
Course Title John Deere C&F HVAC
Prerequisite(s): JDCE1110, JDCE1120
Co-requisite(s): None

Catalog Description: This course provides an understanding of air conditioning system design including system controls and components. Understand the function of compressors, expansion valves, evaporators, condensers, fans and electrical components. Explained are the physical properties of refrigerants, the effects of pressure change, states of matter, and the dynamics of heat transfer. The use of air conditioning service equipment for system service, diagnostics, refrigerant recovery, recycling and system charging are demonstrated. Safety practices are included.

Credit Hours: 2
Class Hours: 15
Lab Hours: 45
Total Contact Hours: 60

II. COURSE OBJECTIVES: *Course will:*

- A. Explain safety practices for servicing air conditioning systems and handling refrigerants.
- B. Explain basic air conditioning system theory of operation.
- C. Explain air conditioning system components design and function.
- D. Explain the physical properties of refrigerants, matter changes of state and heat transfer.
- E. Demonstrate the proper use and care of air condition service equipment.
- F. Explain air conditioning system testing and diagnostic procedures.
- G. Demonstrate refrigerant recovery and recycling.
- H. Demonstrate air conditioning system flushing and cleaning.
- I. Provide hands on air conditioning system testing, servicing and repair.
- J. Provide hands on air conditioning system diagnostics.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES

A. STUDENT LEARNING OUTCOMES: *Student will be able to:*

- 1. Service and repair air conditioning systems safely.
- 2. Understand the operation and design of air conditioning systems.
- 3. Identify air conditioning system components.
- 4. Explain the physical properties of refrigerants and heat transfer.
- 5. Use service tools to identify refrigerants.
- 6. Recover and recycle refrigerants according to federal and state laws and regulations.
- 7. Perform air conditioning system flushing and cleaning.

8. Evacuate and charge an air conditioning system.
9. Use service equipment associated with air conditioning system service and repair.
10. Perform air conditioning system inspections, service, diagnostics and repairs.

B. GENERAL EDUCATION LEARNING OUTCOME:

GELO 3: Critical Thinking & Problem Solving

1. Synthesize information to arrive at reasoned solutions to problems.
2. Acquire and integrate knowledge and construct relationships across disciplines.

IV. CONTENT/TOPICAL OUTLINE

- A. Air conditioning systems safety
- B. Basics of air conditioning systems
- C. Refrigerants and Lubricants
- D. System components
- E. Service equipment
- F. Inspecting the system
- G. Air conditioning system testing and diagnostics
- H. Service, repair and maintenance

V. INSTRUCTIONAL MATERIALS

Required text(s): Service Advisor (made available in the classroom)
FOS Air Conditioning

Other material(s): Required tool set, safety glasses (regulation Z87), leather shoes, John Deere uniform, Colored pencils, notebook, writing instruments

VI. METHODS OF PRESENTATION/INSTRUCTION

A. Methods of presentation typically include a combination of the following:

1. Small and large group discussion
2. Video presentations
3. Demonstrations
4. Project boards
5. Flip charts
6. Handouts
7. Observations
8. Field trips

VII. METHODS OF EVALUATION

A. Methods of evaluation typically include a combination of the following:

1. Notebook (if required)
2. Quizzes
3. Tests
4. Lab Grades
5. Reflection assignments

Grading will follow the SCC Standard Grade Scale Policy. See **Course Information Document** for specific details on how the course grades are calculated.

VIII. SPECIFIC COURSE REQUIREMENTS:

- A.** Students must complete all tests, projects, assignments, and notebook (if required).
- B.** Students must earn a final grade of 70% (2.0) or higher.
- C.** Program safety rules will be followed. See the **Course Information Document** for any additional safety rules established by the instructor.
- D.** Safety belts will be worn at all times, on or in any motorized vehicle, if equipped.
- E.** Attendance and participation. See **Course Information Document** for attendance and participation policy.