

SOUTHEAST COMMUNITY COLLEGE
ADVANCED TECHNOLOGIES & SKILLED TRADES DIVISION
AUTOMOTIVE TECHNOLOGY
COURSE SYLLABUS
November 3, 2025

I. CATALOG DESCRIPTION

Course Number: AUTT1216
Course Title: Automotive Electrical II & HVAC
Prerequisite: AUTT1007, AUTT1016, AUTT1026, AUTT1110

Catalog Description: Advanced interpretation and use of wiring diagrams, electronic component, body control testing and repair. The use of advanced test equipment is covered. Theory, operation and testing of heating ventilation and cooling systems.

Credit Hour: 6
Classroom Hours: 45
Lab Hours: 135
Total Contact Hours: 180

II. COURSE OBJECTIVES: *Course will cover:*

- A. wiring diagrams to repair automotive electrical systems.
- B. operation, diagnosis and repair of power windows, locks, horns, and lighting.
- C. conductor and terminal repair.
- D. components/locations.
- E. component diagnosis.
- F. component testing.
- G. body control electrical.
- H. module testing and communication.
- I. component repair/replacement
- J. testing and repair of electrical/electronic components.
- K. theory and operation, diagnosis and service of the cooling systems.
- L. operation, diagnosis and service of blower controls.
- M. refrigerant theory and operation.
- N. HVAC system checks.
- O. refrigerant recovery and recharging
- P. leak detection.
- Q. diagnosis of HVAC control systems.
- R. HVAC system component repair and replacement.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

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

- 1. Demonstrate the use of wiring diagrams and schematics in the diagnosis and testing of electrical systems.
- 2. repair wiring, install terminals, connectors, and solder conductors.
- 3. Correctly identify and locate and diagnose electrical components used in vehicles.
- 4. Explain the function and diagnose electrical components used in vehicles.
- 5. Identify and explain the function of SIR system components.
- 7. Test the function of individual components used in vehicles.
- 8. Correctly diagnose, and repair or replace electrical components.

9. Demonstrate the correct test procedures for the use of specialized equipment used in the diagnosis and repair of the electrical/electronic system and individual components used on automotive vehicles.
10. Perform the correct service procedures on various electrical/electronic components used on automotive vehicles.
11. Describe the operation of a basic automotive HVAC system.
12. Perform basic system checks on vehicles, make preliminary diagnosis of A/C system problems.
13. Demonstrate current methods of recovery and recharging of automotive refrigerant.
14. Demonstrate current methods of leak testing.
15. Explain the proper methods of compressor, evaporator, condenser, accumulator, expansion valve & orifice tube replacement.
16. Perform system tests and diagnose HVAC control systems.
17. Follow current procedures to replace or repair HVAC components.
18. Follow current procedures to replace or repair cooling system components.

B. GENERAL EDUCATION LEARNING OUTCOMES

GELO #3: Critical Thinking & Problem Solving

Outcomes:

1. Collect, identify, interpret and analyze data.

IV. CONTENT/UNIT OF INSTRUCTION

- A. Circuits
- B. Components/locations
- C. Component diagnosis
- D. Component testing
- E. Component repair/replacement
- F. Service equipment usage and procedures
- G. HVAC theory and operation
- H. Recovery and charging procedures
- I. Complete recovery and recharging
- J. System diagnosis and leak detection
- K. System component repair and replacement
- L. Remove and repair components on vehicles
- M. Diagnosis and repair of all automatic and electronic HVAC control systems

V. INSTRUCTIONAL MATERIALS

The Course Information Document lists the current text(s) required for this class. The list is also available from the campus bookstore. The Course Information Document also lists the tools/equipment or other supplies required for this class.

VI. METHODS OF PRESENTATION

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

1. Lecture
2. Small and large group discussion
3. Video presentation
4. Demonstrations
5. Project boards
6. Handouts
7. Observations
8. Assigned lab projects
9. Online information
10. 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. Attendance/Class conduct

Letter grades will be based on the SCC Standard Grading Scale Policy. **Note:** See the Course Information Document for specific details on how the course grade will be calculated.

VIII. SPECIFIC COURSE REQUIREMENTS

A. Student must:

1. Complete all tests, projects, assignments, and (if assigned) notebook.

B. Attendance:

1. Students must follow the Attendance Policy as stated in the college student handbook, automotive lab and classroom policies handbook or Course Information Document.

C. Shop safety rules will be followed.

D. Any additional course requirements as stipulated by the Instructor.