Course Outline

2026-2027 Catalog

AUT 23 - Automotive Heating and Air Conditioning Lab

Catalog Description

Transfer Status: CSU

Prerequisite: AUT 3 (or concurrent enrollment)

Corequisite: AUT 22

Unit(s): 2.00

Lab: 102.00 Contact hours/0.00 Out of class hours/102.00 Total hours/2.00 Unit(s)

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Course Description: In this course students will develop and demonstrate the hands-on skills required to diagnose, adjust, repair and maintain modern automotive Heating, Ventilation and Air Conditioning (HVAC) and engine cooling systems. Students will use modern test equipment for diagnosis. Specific skills are developed by the use of special tools used in servicing and repair of automotive HVAC and engine cooling systems.

Objectives

Upon successful completion of this course, the student should be able to:

1. Practice proper use of personal protective equipment while working on and around automotive HVAC systems.
2. Analyze automotive HVAC system component design and function.
3. Analyze and define the theory and operation of the automotive HVAC systems.
4. Execute best practice repair procedures and proper equipement usage.
5. Identify environmental and regulatory considerations for automotive HVAC systems.

Course Content

Topic Titles / Suggested Time Topic

Lab

Topics	Lab Hrs
Service and maintain AC service equipment	8.00
Perform multiple refrigerant leak detection methods	8.00
Practice refrigerant handling safety procedures	4.00
Perform ventilation system diagnostic operations	12.00
Perform AC service operations using recovery machines	22.00
Remove and replace operational components of the AC system	17.00
Perform service operations using engine coolant testers and flush machine	4.00
Pressure and performance tests on the refrigeration system	9.00
Perform electrical diagnosis on AC ventilation systems	9.00
Replace and repair electrical vacuum controls and systems	9.00
Total Hours:	**102.00**

Methods of Instruction

A. Collaborative Group Work
B. Discussion
C. Instructor Demonstrations
D. Laboratory Experiments
E. Multimedia Presentations
F. Problem-Solving Sessions

Methods of Evaluation

A. Exams/Tests
B. Demonstration
C. Group Participation (Inactive)
D. Class participation
E. Lab Projects
F. Final Examination
G. Performance Examinations

Examples of Assignments

Reading Assignments

1. Consult a repair publication and read the section on "Refrigerant Recover". Be ready to show the instructor where you found the correct repair information and specifications.
2. Using Alldata or Mitchell, acquire, read, and print the section about "Air Conditioning Compressor Removal". Be prepared to show the instructor the procedure in lab.

Writing Assignments

1. Acquire data about the proper procedures for removal and reassembly of a major engine component and write your short answers (two sentence minimum) in the spaces provided in your lab workbook.
2. In your classroom lab workbook, write a one-page summary of what you learned in today's lab.

Out-of-Class Assignments

1. Not applicable.

Recommended Materials of Instruction

Halderman, J. (2018). Automotive Engines and Air Conditioning. *Pearson, 8th.* 9780134603698.

Minimum Qualifications

Automotive Technology

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