



Course Outline

2026-2027 Catalog

AUT 22 - Automotive Heating and Air Conditioning Lecture

Catalog Description

Transfer Status: CSU

Prerequisite: AUT 3 (or concurrent enrollment)

Unit(s): 2.00

Lecture: 34.00 Contact hours/68.00 Out of class hours/102.00 Total hours/2.00 Unit(s)

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Course Description: In this course students study the theory and principles of operation of automotive Heating, Ventilation and Air Conditioning (HVAC) systems as well as engine cooling system operation and repair. Basic laws of heat transfer, refrigeration and compression/expansion of liquid/vapor are introduced.

Objectives

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

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

Course Content

Topic Titles / Suggested Time Topic	
<u>Lecture</u>	
<u>Topics</u>	<u>Lec Hrs</u>
Principles and theory of heating and air conditioning operation	8.00
The dynamics of refrigerant in an operating air conditioning system	7.00
The operating principles and all individual parts of HVAC systems	6.00
Diagnosis and repair of the automotive HVAC system including refrigeration, heating and ventilation components	13.00
Total Hours:	34.00

Methods of Instruction

- A. Collaborative Group Work
- B. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
- C. Instructor Demonstrations
- D. Lecture
- E. Multimedia Presentations
- F. Reading Assignments

Methods of Evaluation

- A. Exams/Tests
- B. Homework
- C. Class participation
- D. Written Examinations

Examples of Assignments

Reading Assignments

1. After reading the chapter on "Refrigerants and Refrigerant Oils, complete the crossword puzzle and upload the completed puzzle to the assignment in the LMS.
2. After reading the supplemental SOP (Standard Operating Procedures), write one paragraph on the purpose of a SOP and the importance of implementation in a shop environment.

Writing Assignments

1. As the service manager of a busy automotive repair shop, your task is to draft a detailed Standard Operating Procedure (SOP) to guide our new technicians.
2. In your classroom lecture notebook, write a 1-page summary of what you learned in today's lecture.

Out-of-Class Assignments

1. Read the chapter on "Air Conditioning Theory" in your textbook and complete the end of chapter quiz.
2. Using at least three paragraphs, summarize what you learned this week in class. Include objectives met and applications of new concepts.

Recommended Materials of Instruction

Halderman, J. (2025). Automotive Heating and Air Conditioning. *Pearson, 9th*. 9780135434123.

Minimum Qualifications

Automotive Technology

Created/Revised by: Kielb, Craig

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