



AUTO 2500

Division: Career and Technical Education

Department: Automotive Technology

Course: AUTO 2500

Title: Automotive Heating and Air Conditioning

Catalog Description:

Students will cover the principles, operation, and servicing of automotive air conditioning and heating systems and their components.

General Education Requirements: N/A

Semesters Offered: TBA

Credit/Time Requirement: Credit: 4; Lecture: 2; Lab: 5

Clock/Hour Requirements: 105

Offered for Non-Credit: No

Prerequisites: None

Corequisites: None

Justification:

This course is required for Automotive Service Excellence (A.S.E.) certification. It is approved by the program advisory committee.

Student Learning Outcomes:

Upon successful completion of this course, students will be able to safely perform the tasks listed in the current edition of *A.S.E. Certification For Automobile Training Programs*.

Content:

Upon completion of this course, students understand and will be able to explain:

- safety
- matter, heat, and pressure as related to air conditioning
- principles of refrigeration
- the refrigeration circuit
- temperature - pressure relationship
- moisture and moisture removal
- temperature and pressure control devices
- case/duct systems
- automatic temperature controls
- air conditioning system diagnosis
- refrigerant recovery, charging the system
- retrofit R-12 to R-134a

- air conditioning handling and recovery certification (required)
- troubleshooting the heater system

General Education Outcomes:

- 4) Retrieve, evaluate, interpret, and deliver information through a variety of traditional and electronic media. Students will utilize electronic and written reference manuals and computer diagnostics to identify, troubleshoot, and repair air conditioning and heating systems, and other components.
- 5) Apply a cultural and historical awareness to a variety of phenomena. Students will develop an understanding of the history of automobile development and its relationship to past, current, and future developments in the automotive field.

Key Performance Indicators:

In class:

- Students shall be required to complete chapter tests (50% of the grade), and pass a final test (50% of the grade). In addition, students are required to perform shop tasks (P1 tasks 100%, P2 tasks 90%, and P3 tasks 80% to pass course) as outlined in the current edition of *A.S.E. Certification For Automobile Training Programs*.

Following class:

- Course evaluation will be demonstrated by the following methods:
 - student feedback as per A.S.E. requirements
 - students passing A.S.E. tests
 - students transferring to other post secondary institutions
 - student performance in subsequent courses.

Representative Text and/or Supplies:

- Dwiggin, Boyce H., *Automotive Air Conditioning*, current edition, Thomson/Delmar Learning.

Optimum Class Size: 10

Maximum Class Size: 18

Signatures:

I hereby submit this course syllabus:

Brent Reese, BS, Associate Professor

I hereby find this course consistent with the goals and resources of the Automotive Technology Department:

Brent Reese, BS, Associate Professor, Chair

I hereby find this course consistent with the goals and resources of the Career and Technical Education Division:

Michael P. Medley, MBA, Assistant Professor, Dean

I have discussed the need for library resources related to this class with the person submitting the syllabus:

Lynn Anderson, MLIS, Technical Services Librarian (Main Campus)

Michelle Olsen, MLS, Campus Librarian (Richfield Campus)