



AUTO 2701 (formerly AUTO 2700)

Division: Career and Technical Education

Department: Transportation Technology

Course: AUTO 2701 (formerly AUTO 2700)

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. **Co-requisite: The lecture AUTO 2701 must be taken concurrently with the lab AUTO 2705.**

General Education Requirements: N/A

Semesters Offered: TBA

Credit/Time Requirement: Credit: 2; Lecture: 2; Lab: 0

Clock/Hour Requirements: 30

Offered for Non-Credit: Yes

Prerequisites: N/A

Corequisites: AUTO 2705

Justification:

This course is required for Automotive Service Excellence (A.S.E.) certification. It is approved by the advisory committee for an AAS degree in Automotive Technology.

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 will understand and 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
- Environmental concerns of Freon.

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.

Applied Education Outcomes:

- 1) Students will acquire entry-level skills specific to and appropriate for employment in their chosen field of study.
Students will utilize electronic and written reference manuals and computer diagnostics to identify, troubleshoot, and repair air conditioning and heating systems, and other components.
- 3) Students will demonstrate safe practices and awareness of potential hazards in their field of expertise.
Students will study, test on, and practice a safe work environment in the lab area.

Key Performance Indicators:

Student Learning Outcomes will be assessed by two or more of the following Key Performance Indicators:

- chapter assignments
- final test
- shop cleanup
- feedback as per A.S.E. requirements
- passing A.S.E. tests
- transferring to other post-secondary institutions
- performance in subsequent courses.

Representative Text and/or Supplies:

AUTO 2701 (formerly AUTO 2700)

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

Optimum Class Size: 20

Maximum Class Size: 35

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 Transportation 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)