

El Paso Community College

Syllabus

Part II

Official Course Description

SUBJECT AREA	<u>Automotive Technology</u>
SUBJECT RUBRIC AND NUMBER	<u>AUMT 1345</u>
COURSE TITLE	<u>Automotive Climate Control Systems</u>
COURSE CREDIT HOURS	<u>3 2 :<!-- 4</u--> Credits Lec Lab</u>

I. Catalog Description

Diagnosis and repair of manual/electronic climate control systems. Includes the refrigeration cycle and EPA guidelines for refrigerant handling. May be taught manufacturer specific. **Prerequisite: AUMT 1307. (2:4). Lab fee.**

II. Course Objectives

- A. Unit I. Shop Safety
 - 1. Work safely in an Automotive Shop.
 - 2. Explain laws regarding hazardous materials in the shop.

- B. Unit II. Air Conditioning Service
 - 1. Define sensible heat, evaporation fusion, radiation, and conduction.
 - 2. Identify the cooling system and air conditioning system components.
 - 3. Perform a pressure test on the cooling system and air conditioning system.
 - 4. Obtain repair information and specifications from manuals and computers.
 - 5. Use wiring diagrams while diagnosing electrical problems.
 - 6. Use a strategy-based diagnostic procedure while solving customer concerns.
 - 7. Document service or repair procedure on the Work Order or Lab Report.
 - 8. Compare actual time spent on a repair to flat rate time.
 - 9. Demonstrate efficiency from start to finish of the job.
 - 10. Obtain Air Conditioning Service Certification.
 - 11. Identify proper tools and equipment for the job.

- C. Unit III. The Refrigeration System
 - 1. Explain the basic theory of refrigeration cycle operation
 - 2. Perform a leak test using the electronic leak detector unit
 - 3. Compare temperature and pressure relationships to manufacturer’s specification charts.
 - 4. Test compressor cycle time compared to manufacturer’s specification.
 - 5. Partially charge system to test for oil leaks.
 - 6. Test and inspect air delivery and distribution section.
 - 7. Remove and replace air conditioning system components.

- D. Unit IV. Retrofit A/C Systems
 - 1. Explain the use of the refrigerant recovery machine.
 - 2. Use the refrigerant recovery machine.
 - 3. Install retrofit system components.
 - 4. Charge air conditioning system with R-134A.

5. Test air conditioning system for proper operation to manufacturer's specifications.
- E. Unit V. A/C System Controls
1. Explain the operating principles of basic A/C control switches.
 2. Perform A/C system electrical diagnostic tests.
 3. Remove and/or replace defective switches, relays, circuit-breakers, and fuses.
 4. Perform bench testing procedures on blower motors.
 5. Perform vacuum system tests on duct systems.
- F. Unit VI. Engine Cooling and Comfort Heating Systems
1. Explain the operation principles of a cooling system.
 2. Perform pressure test on radiator and cap.
 3. Inspect operation of pulleys, belts, flex fan, and electric fan.
 4. Inspect coolant recovery system.
 5. Test heater for proper operating temperature.

III. THECB Learning Outcomes (WECM)

1. Use safety procedures including proper refrigerant handling.
2. Explain the refrigeration cycle.
3. Diagnose and repair systems including automatic temperature control.

IV. Evaluation

- A. Unit Exams will count 30% toward final grade.
B. Lab Exams will count 60% toward final grade.
C. Final Exam will count 10% toward final grade.

D. Grading Scale

A	=	90 - 100
B	=	80 - 89
C	=	70 - 79
D	=	60 - 69
F	=	Below 60

- E. Cheating will not be permitted. Any person caught cheating will receive a grade of zero for that exam.

V. Disability Statement (Americans with Disabilities Act [ADA])

EPCC offers a variety of services to persons with documented sensory, mental, physical, or temporary disabling conditions to promote success in classes. If you have a disability and believe you may need services, you are encouraged to contact the Center for Students with Disabilities to discuss your needs with a counselor. All discussions and documentation are kept confidential. Offices located: VV Rm C-112 (831-2426); TM Rm 1400 (831-5808); RG Rm B-201 (831-4198); NWC Rm M-54 (831-8815); and MDP Rm A-125 (831-7024).

VI. 6 Drop Rule

Students who began attending Texas public institutions of higher education for the first time during the Fall 2007 semester or later are subject to a 6-Drop limit for all undergraduate classes. Developmental, ESL, Dual Credit and Early College High School classes are exempt from this rule. All students should consult with their instructor before dropping a class. Academic assistance is available. Students are encouraged to

see Counseling Services if dropping because exemptions may apply. Refer to the EPCC catalog and website for additional information.

VII. Title IX and Sex Discrimination

Title 9 (20 U.S.C. 1681 & 34 C.F.R. Part 106) states the following "No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any educational program or activity receiving Federal financial assistance." The Violence Against Women Act (VAWA) prohibits stalking, date violence, sexual violence, and domestic violence for all students, employees and visitors (male and female). If you have any concerns related to discrimination, harassment, or assault (of any type) you can contact the Assistant to the Vice President for Student and Enrollment Services at 915-831-2655. Employees can call the Manager of Employee Relations at 915-831-6458. Reports of sexual assault/violence may also be reported to EPCC Police at 915-831-2200.