



**I. COURSE DESCRIPTION:** Students will study automotive computer controlled climate control systems, including construction and operating principles of body control modules, compressor control inputs, pressure cycling switches and thermostatic cycling switches. The students will have an opportunity to check A/C systems for leaks, check high and low side pressures, verify operation of climate control system circuits. They will also use a computer program to create work orders, customer data base, and a technician list to be applied to each work order.

**II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:**

Upon successful completion of this course, the student will demonstrate the ability to:

1. Describe the purpose and fundamentals of computer controlled climate control systems.  
Potential Elements of the Performance:
  - Describe body control and electronic control module operation.
  - Explain the purpose of thermistors and photoelectric devices.
2. Explain the construction and operating principles of computer controlled climate control systems.  
Potential Elements of the Performance:
  - Observe electronic circuit diagram of climate control systems.
  - Explain how air mixture doors move.
  - Describe computer controlled expansion valves.
3. Perform Inspection and testing of climate control systems following manufacturers recommendations. ( requires ODP certification. )  
Potential Elements of the Performance:
  - Perform line and leak tests.
  - Observe high and low side pressures.
  - Complete a system performance test.
  - Scan system to verify proper operation.
4. Perform assigned operations for air conditioning and climate control systems following manufacturers recommendations. ( requires ODP certification. )  
Potential Elements of the Performance:
  - Retrieve fault codes.
  - Explain discharging, evacuation recovery, recycling and recharging.
  - Remove and replace system components, compressor, condenser and control devices.

5. Explain the purpose and importance of a shop management computer based operational system.  
Potential Elements of the Performance:
  - Compare and contrast manual shop systems with computer based programs.
  - Participate in group discussion focusing on the importance of accuracy and time to deal with customers.
6. Perform assigned operations on shop management computer based operational system.  
Potential Elements of the Performance:
  - Create work orders.
  - Add customers and vehicles to data base.
  - Assign work orders to fellow students.

### III. TOPICS:

1. Describe the purpose and fundamentals of computer controlled climate control systems.
2. Explain the construction and operating principles of computer controlled climate control systems.
3. Perform Inspection and testing of climate control systems following manufacturers recommendations. ( requires ODP certification. )
4. Perform assigned operations for air conditioning and climate control systems following manufacturers recommendations. ( requires ODP certification. )
5. Explain the purpose and importance of a shop management computer based operational system.
6. Perform assigned operations on shop management computer based operational system.

### IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Modern Automotive Technology – Text & Workbook

Pens, pencils, calculator, 3-ring binder

\*shop coat or coveralls

\*CSA approved steel toe boots (high top)

\*CSA approved safety glasses

\*these items mandatory for shop

**V. EVALUATION PROCESS/GRADING SYSTEM:**

The final grade for this course will be based on the results of classroom, assignments and shop evaluations weighed as indicated:

Classroom – 60% of the final grade is comprised of term tests

Assignments – 10% of the final grade is comprised of a number of technical reports

Shop – 30% of the final grade is comprised of attendance, punctuality, preparedness, student ability, work organization and general attitude

(Student will be given notice of test and assignment dates in advance)

The following semester grades will be assigned to students:

<b>Grade</b>	<b>Definition</b>	<i>Grade Point Equivalent</i>
A+	90 – 100%	4.00
A	80 – 89%	
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 – 59%	1.00
F (Fail)	49% and below	0.00
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field /clinical placement or non-graded subject area.	
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.	
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.	
NR	Grade not reported to Registrar's office.	
W	Student has withdrawn from the course without academic penalty.	

**VI. SPECIAL NOTES:**Special Needs:

If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Special Needs office. Visit Room E1101 or call Extension 703 so that support services can be arranged for you.

Retention of Course Outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student Rights and Responsibilities*. Students who engage in “academic dishonesty” will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Course Outline Amendments:

The professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Substitute course information is available in the Registrar's office.

*<include any other special notes appropriate to your course>*

**VII. PRIOR LEARNING ASSESSMENT:**

Students who wish to apply for advanced credit in the course should consult the professor. Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

**VIII. DIRECT CREDIT TRANSFERS:**

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean's secretary. Students will be required to provide a transcript and course outline related to the course in question.