



**I. COURSE DESCRIPTION:**

In this course the student will be introduced to mobile air conditioning systems, including identification of major components and operating principles. It will also outline the basic information and fundamentals of hydraulics and pneumatics systems utilized on motor power vehicles. General concepts of principles of operation of valves, cylinders, reservoirs, schematics and fluids utilized in the hydraulic and pneumatics systems will be discussed. The course will also teach the student a working knowledge required to safely set up and use oxy-acetylene welding equipment for welding, heating & cutting.

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

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

1. Identify the major components and state the operating principles of mobile air conditioning systems.

Potential Elements of the Performance:

- Complete a project which shows how mobile air conditioning systems operate.
- State applicable laws of physics related to air conditioning systems operation.
- Identify air conditioning system major components.
- Compare R12 systems to R134a systems.
- Explain 4 methods of refrigerant leak detection.

2. Explain the fundamentals and basic operating principles of hydraulic and pneumatic systems utilized in motive power vehicles.

Potential Elements of the Performance:

- Compare & contrast hydraulic versus pneumatic.
- Draw, read and interpret hydraulic and pneumatic system graphs.
- Demonstrate and perform visual inspection on lines, valves, cylinders, reservoirs and fluids.
- Discuss hydraulic and pneumatics as applied to brake, power steering, automatic transmission, engine lubrication, suspension and fuel systems.

3. Demonstrate a working knowledge required to safely set up and use oxy-acetylene welding equipment for welding, heating & cutting.

Potential Elements of the Performance:

- Explain metallurgy and the heat treatment of metals.
- Outline the proper handling of oxygen and acetylene.

- Demonstrate the setting of pressure regulators.
- Describe the use of proper eye and body protection.
- Produce fusion and braze welding on butt, lap corner, edge and tee joints.

### **III. TOPICS:**

1. Mobile air conditioning systems.
2. Hydraulic & pneumatics.
3. Oxy-acetylene cutting & welding.

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

Automotive Technology – Text & Workbook  
Pens, pencils, calculator and 3-ring binder

Shop Coat or Coveralls  
CSA approved steel toe boots (high top)  
CSA approved safety glasses  
(these items are mandatory for shop)

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

**The final grade for this course will be based on the results of classroom, assignment and shop evaluation weighed as indicated:**  
**Classroom - 60% of the final grade is comprised of term tests.**  
**Assignment - 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%	3.00
B	70 - 79%	2.00
C	60 - 69%	1.00
D	50 – 59%	0.00
F (Fail)	49% and below	
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.

Communication:

The College considers **WebCT/LMS** as the primary channel of communication for each course. Regularly checking this software platform is critical as it will keep you directly connected with faculty and current course information. Success in this course may be directly related to your willingness to take advantage of the **Learning Management System** communication tool.

Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student Code of Conduct*. 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.

**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.