



BROWARD COMMUNITY COLLEGE COURSE OUTLINE

LAST REVIEW: 2008-2009

(i.e. 2003-2004)

NEXT REVIEW: 2013-2014

(i.e. 2008-2009)

STATUS: A

(A, I, D)

COURSE TITLE: Cabin Atmosphere & Control Systems

COMMON COURSE NUMBER: AMT 0220

CREDIT HOURS: 1

CONTACT HOUR BREAKDOWN

(per 16 week term)

CLOCK HOURS: 50

(Voc. Course ONLY)

Lecture: 25

Lab: 25

Clinic:

Other:

PREREQUISITE(S): None

COREQUISITE(S): None

PRE/COREQUISITE(S): None

COURSE DESCRIPTION *(750 characters, maximum):* This unit covers the various systems used to condition air and cabin pressurization as well as practical experience in inspecting, checking, troubleshooting, and servicing the oxygen system. Student fee charged.

General Education Requirements – Associate of Arts Degree (AA), meets Area(s): Area

General Education Requirements – Associate in Science Degree (AS), meets Area(s): Area

General Education Requirements – Associate in Applied Science Degree (AAS), meets Area(s): Area

UNIT TITLES

1. Heating, Cooling, Air-Conditioning, Pressurization, and Oxygen System Components
2. Heating, Cooling, Air-Conditioning, and Pressurization Systems
3. Oxygen Systems



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ASSESSMENT:

Please provide a brief description (250 characters maximum) that details how students will be assessed on the course outcomes.

1. Quizzes, Test, and/or Final Exam (cumulative/comprehensive);
2. Selected faculty may assess homework, projects, class participation/attendance, and/or extra credit projects.
Upon successful completion of this course, the students should be able to inspect, check, troubleshoot, and service air-conditioning, cabin pressurization, and oxygen systems.

**** Complete the following only if course is seeking general education status ****

GENERAL EDUCATION Competencies and Skills*:

Please highlight in green font all Competencies/Skills from the list below that apply to this course. In the box to the right of the Competency/Skill, enter all specific learning outcome numbers (i.e. 1.1, 2.7, 5.12) that apply.

1. Read with critical comprehension	
2. Speak and listen effectively	
3. Speak and listen effectively	
4. Think creatively, logically, critically, and reflectively (analyze, synthesize, apply, and evaluate)	
5. Demonstrate and apply literacy in its various forms: (highlight in green <u>ALL</u> that apply) (1. technological, 2. informational, 3. mathematical, 4. scientific, 5. cultural, 6. historical, 7. aesthetic and/or 8. environmental)	
6. Apply problem solving techniques to real-world experiences	
7. Apply methods of scientific inquiry	
8. Demonstrate an understanding of the physical and biological environment and how it is impacted by human beings	
9. Demonstrate an understanding of and appreciation for human diversities and commonalities	
10. Collaborate with others to achieve common goals.	
11. Research, synthesize and produce original work	
12. Practice ethical behavior	
13. Demonstrate self-direction and self motivation	
14. Assume responsibility for and understand the impact of personal behaviors on self and society	
15. Contribute to the welfare of the community	

** General Education Competencies and Skills endorsed by '05-'06 General Education Task Force*



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UNITS

Unit 1 Heating, Cooling, Air-Conditioning, Pressurization, and Oxygen System Components

General Outcome:

- 1.0 The student shall:** The students should be able to repair heating, cooling, air-conditioning, pressurization, and oxygen system components.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 1.1** Describe the usual reasons a surface combustion heater fails to operate.
- 1.2** Describe the effects of cracks or holes in an exhaust-type heat exchanger.
- 1.3** List the usual sources of contamination of a freon system.
- 1.4** Describe the method of protecting a freon system from contamination during replacement of a component.



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Unit 2 Heating, Cooling, Air-Conditioning and Pressurization Systems

General Outcome:

- 2.0 The student shall:** The students should be able to inspect, check, troubleshoot, service, and repair heating, cooling, air-conditioning and pressurization systems.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 2.1 Explain the operating principles of a thermostatically controlled surface combustion heater.
- 2.2 Explain the methods used to control cabin pressure of a pressurized aircraft.
- 2.3 Describe the protective features included in the control circuits of surface combustion heaters.
- 2.4 Describe the purpose and operation of check valves in the delivery air ducts of a pressurization system.
- 2.5 Explain the basic principles of providing and controlling aircraft pressurization.
- 2.6 Describe the inspection requirements of cabin heating systems that utilize an exhaust heat exchanger as a source of heated air.
- 2.7 Describe the method of checking a combustion heater fuel system for leaks.
- 2.8 Describe the function of the condenser in a freon cooling system.
- 2.9 Describe the function of the evaporator in a freon cooling system.
- 2.10 Describe the function of an expansion valve in a freon cooling system.



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- 2.11 Describe the location, in relationship to each other, of the units in a freon cooling system.
- 2.12 Explain the method of determining the liquid level in a vapor-cycle cooling system.
- 2.13 Demonstrate the procedure for servicing a vapor-cycle air-conditioning system that has lost all its freon charge.
- 2.14 Explain the basic operating principles of an air-cycle cooling system.
- 2.15 Describe the function of a jet pump in a pressurization and air-conditioning system.
- 2.16 Describe the function of a mixing valve in an air-conditioning system.
- 2.17 Describe the function of the negative pressure-relief valve in a pressurization system.
- 2.18 Describe the function of the outflow valve in a pressurization system.
- 2.19 Describe the function and principles of operation of an automatic cabin rate-of-climb control system.



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Unit 3 Oxygen Systems

General Outcome:

- 3.0 The student shall:** The students should be able to inspect, check, troubleshoot, service and repair oxygen systems.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 3.1** Check oxygen system for leakage.
- 3.2** Service oxygen system with breathing oxygen.
- 3.3** Inspect a breathing oxygen system for contamination.