**I. COURSE TITLE:** Aircraft Atmospheric and Protection Systems

 **COURSE NUMBER:** 2242 **CATALOG PREFIX:** AVIT

**II. PREREQUISITE(S):**

**III. CREDIT HOURS:** 3 **LECTURE HOURS:** 2

 **LABORATORY HOURS:** 1 (2 contact) **OBSERVATION HOURS:**

**IV. COURSE DESCRIPTION:**

This course will introduce the student to fire protection, ice, rain, and cabin atmosphere control systems. Students will inspect, check, troubleshoot, and service smoke, carbon monoxide, fire detection, and fire extinguishing systems. Students will investigate cabin atmosphere control systems which include heating and air conditioning both vapor cycle and air cycle. Student will inspect, check, troubleshoot, and service aircraft oxygen systems.

**V. ADOPTED TEXT(S):**

Jeppesen Maintenance

 A&P Technician

Airframe Textbook

**VI. COURSE OBJECTIVES:**

Students will be able to:

• Inspect, check, and service smoke and carbon monoxide detection

 systems (1)

• Inspect, check, service, troubleshoot, and repair aircraft fire detection

 and extinguishing systems (3)

• Inspect, check, troubleshoot, service, and repair airframe ice and rain

 control systems (2)

• Inspect, check, troubleshoot, service, and repair heating, cooling, air

 conditioning, pressurization systems, and air cycle machines (1)

• Inspect, check, troubleshoot, service, and repair heating, cooling, air-

 conditioning, and pressurization systems (1)

• Inspect, check, troubleshoot, service and repair oxygen systems (2)

 Objective levels:

Level 1 requires:

Knowledge of general principles, but no practical application.

No development of manipulative skill.

Instruction by lecture, demonstration, and discussion.

Level 2 requires:

Knowledge of general principles, and limited practical application.

Development of sufficient manipulative skill to perform basic operations. Instruction by lecture, demonstration, discussion, and limited practical application.

Level 3 requires:

Knowledge of general principles, and performance of a high degree of practical application.

Development of sufficient manipulative skills to simulate return to service.

Instruction by lecture, demonstration, discussion, and a high degree of practical application.

**VII. COURSE METHODOLOGY:**

May included but not limited to lecture and problems solving, group and lab projects, in-class and home assignments, quizzes and tests. Lab project will be individual and group. Attendance to class and lab is required.

**VIII. GRADING**

A= 90-100

 B= 80-89

 C= 70-79

 D= 60-69

 F= 0-59

Grades of 69 and below will not meet the requirements of the FAA for Mechanic

Certificate .

See catalog for description of other possible grades.

**IX. COURSE OUTLINE:**

Weeks:

1. Fire detection, fire zones, fire-detection/overheat systems, Fenwal systems.

2. Kidde system, Llndberg system, Systron-Donner system, flame detectors, smoke and toxic gas detection systems.

3. Carbon monoxide detectors, fire-detection system inspection and testing, spot-type and thermocouple maintenance, continuous-loop maintenance practices.

4. Fire-extinguishing systems, fire-extinguishing agents, portable fire extinguishers, fixed fire-extinguishing systems, high-rate discharge systems, inspection and servicing.

Test 1

5. Airframe ice control systems, icing effects, ice detection systems, anti-icing systems.

6. De-icing systems, rubber de-icer boot system, de-icing system components, electrothermal de-icing.

7. Ground de-icing of aircraft, frost removal, rain control systems, windshield wiper systems, chemical rain repellant, pneumatic rain removal systems.

8. The atmosphere, human respiration and circulation, hypoxia, carbon monoxide poisoning.

Test 2

9. Oxygen systems, sources of supplemental oxygen, oxygen systems and components, storage cylinders, regulators, masks, liquid oxygen systems.

10. Chemical oxygen systems, oxygen system servicing, prevention of oxygen fires or explosions.

11. Pressurization systems, sources of pressurizing air, control of cabin pressure, cabin pressurization troubleshooting.

12. Cabin climate control systems, ventilation systems, heating systems.

Test 3

13. Aircraft air conditioning systems, air-cycle air conditioning, vapor-cycle air conditioning.

14. Air conditioning service equipment, system servicing.

15. Climate control tests and inspection.

16. Final exam

**X. OTHER REQUIRED TEXTS, SOFTWARE, AND MATERIALS:**

FAA AC-65-15A

Airframe and Powerplant Mechanics

Airframe Handbook

 FAA-AC-43.13-1B/2B

Acceptable methods, Techniques, and practices of aircraft inspection and Repair

**XI. EVALUATION:**

Test count – 40% of Final Grade

 Quizzes count – 10% of Final Grade

 Lab Grade counts – 50% of Final Grade

**XII. SPECIFIC MANAGEMENT REQUIREMENTS:**

Class and lab attendance is mandatory. Students are required to be in class and lab to satisfy the time requirement of the FAA. Quizzes cannot be made up. No test can be taken late without prior approval of the instructor.

**XIII. OTHER INFORMATION:**

**FERPA:** Students need to understand that your work may be seen by others. Others may see your work when being distributed, during group project work, or if it is chosen for demonstration purposes. Students also need to know that there is a strong possibility that your work may be submitted to other entities for the purpose of plagiarism checks.

**DISABILITIES:** Students with disabilities may contact the Disabilities Service Office, Central Campus, at 800-628-7722 or 937-393-3431.