**I. COURSE TITLE:** Aircraft Operations and Preservation

 **COURSE NUMBER:** 1111 **CATALOG PREFIX:** AVIT

**II. PREREQUISITE(S):**

**III. CREDIT HOURS:** 5 **LECTURE HOURS:** 3

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

**IV. COURSE DESCRIPTION:**

In this course the student will learn the proper way to move, receive and launch aircraft which will include taxiing, towing, tugging and marshaling. The student will learn how to service, fuel, oil and various other serviceable items. The student will also learn how to jack aircraft and how to perform weight and balance calculations. This course covers aircraft corrosion and corrosive materials identification and how to protect, clean and preserve aircraft.

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

Jeppesen Maintenance

 A&P Technician

General Textbook

Jeppesen Maintenance

 A&P Technician

General Workbook

**VI. COURSE OBJECTIVES:**

Students will be able to:

• Start, ground operate, move, service and secure aircraft (2)

• Identify and select proper fuels used in aircraft (2)

• Identify ground operation zones and hazardous areas around aircraft (2)

• Marshall an airplane (2)

• Jack and weigh aircraft (2)

• Perform complete weight and balance checks and record data (3)

• Identify and select aircraft cleaning materials (3)

• Inspect, identify, remove and treat aircraft corrosion and perform aircraft

 cleaning (3)

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. Shop safety, safety around machines, compressed air safety, and material safety data sheets.

2. Fire safety, personal fire protection, classification of fires, types of fire extinguishers.

3. Jacking and hoisting aircraft, foreign object damage, safety around helicopters, aircraft tie down and securing procedures.

4. Aircraft engine start procedures, hand propping, turbine engine starts, hung starts, hot starts, taxiing aircraft, towing aircraft, marshaling aircraft.

 Test 1

5. Ground service equipment, electrical ground power units, hydraulic power units, servicing oxygen, aircraft fuels, aircraft fuel performance numbers, turbine fuels, fuel volatility, fuel and static electricity.

6. Fueling aircraft, fuel contamination control, turbine fuel contamination, fuel microbial growth, fuel surfactants, aircraft pressure fueling, defueling aircraft.

7. Aircraft weighing procedures, aircraft weight, aircraft weight limitations, center of gravity, aircraft loading aspects, aircraft datum, center of gravity positions.

8. Weight and balance principles, calculating weight and balance, preparation for weight and balance, equipment used for weighting aircraft, recording weight and balance data, locating the CG.

Test 2

9. Mean aerodynamic cord, empty weight CG, loaded CG range, weight distribution, air taxiing loading (Part 135).

10. Shifting the CG, ballast, weight and balance change after alterations, adverse loading CG forward and rearward, maximum gross weight check, maximum land weight check.

11. Helicopter weight and balance, calculating weight and balance forward and aft, calculating lateral CG.

12. Aircraft cleaning, exterior cleaning, non-metal cleaning, powerplant cleaning.

Test 3

13. Corrosion, chemical corrosion, electro-chemical corrosion, types of corrosion, pitting corrosion, galvanic corrosion, piliform corrosion, intergranular corrosion, exfoliation, stress corrosion, fretting corrosion.

14. Corrosive agents, acids, alkalis, salts, mercury, water, air, organic growths, corrosion detection methods, corrosion prone areas.

15. Treatment of corrosion, corrosion removal, chemical neutralization, protective coating, treatment of ferrous metals, treatment of magnesium alloys, treatment of aluminum, corrosion prevention.

16. Final Exam

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

FAA-H-8083-30

 Aviation Maintenance Technician 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.