**I. COURSE TITLE:** Aircraft Fuel Systems

 **COURSE NUMBER:** 2222 **CATALOG PREFIX:** AVIT

**II. PREREQUISITE(S):**

**III. CREDIT HOURS:** 2 **LECTURE HOURS:** 1

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

**IV. COURSE DESCRIPTION:**

This course will introduce the student to aircraft fuels and fuel systems. The student will identify different aircraft fuels, tanks and types of fuel systems used in aircraft. The student will remove, inspect, and install aircraft rigid and bladder type cell tanks. Students will learn the effects that atmospheric conditions have on fuel and how aircraft fuel systems manage these effects.

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

Jeppesen Maintenance

 A&P Technician

Airframe Textbook

**VI. COURSE OBJECTIVES:**

Students will be able to:

• Check and service fuel dump systems (1)

• Perform fuel management transfer, and defueling (1)

• Inspect, check, and repair pressure fueling systems (1)

• Repair aircraft fuel system components (2)

• Inspect and repair fluid quantity indicating systems (2)

• Troubleshoot, service, and repair fluid pressure and temperature warning

 systems (2)

• Inspect, check, service, troubleshoot, and repair aircraft fuel systems (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 include but not limited to Lecture and problem solving, independent and group projects, in-class and home assignments, quizzes, and tests. Problem solving will use both graphical and mathematical methods.

Attendance 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. Characteristics of aviation fuels, reciprocating engine fuel, fuel volatility.

2. Vapor lock, carburetor icing, aromatic fuels, detonation, preignition, octane and performance numbers.

3. Fuel identification, turbine engine fuels, types of turbine engine fuels, problems with water in turbine fuel, fuel contamination.

4. Basic fuel system requirements, single-engine aircraft fuel systems, gravity-feed systems, pump-feed systems.

 Test 1

5. High-wing airplane using a fuel injection system, small multi-engine aircraft fuel systems, large reciprocating-engine aircraft fuel systems.

6. Jet transport aircraft fuel systems.

7. Helicopter fuel systems, types of fuel tanks

8. Fuel caps, fuel lines, and fuel valves.

Test 2

9. Hand operated fuel valves, motor operated fuel valves, and solenoid operated fuel valves.

10. Fuel pumps, hand operated pumps, centrifugal pumps, fuel ejector pumps.

11. Pulsating fuel pumps, vane-type fuel pumps, fuel filters, fuel heaters.

12. Fuel quantity indicating systems, flowmeters, fuel temperature gauges, fuel pressure gauges, fuel dumps systems.

Test 3

13. Fuel tank repair and testing, fuel leak classification.

14. Fuel system servicing, fuel system contaminants, surfactants, microorganism.

15. Fueling procedures, pressure fueling, fuel storage, defueling aircraft.

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.