**I. COURSE TITLE:** Aircraft Turbine Engines II

 **COURSE NUMBER:** 2362 **CATALOG PREFIX:** AVIT

**II. PREREQUISITE(S):**

**III. CREDIT HOURS:** 6 **LECTURE HOURS:** 4

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

**IV. COURSE DESCRIPTION:**

This course will introduce the student to the ignition, electrical, fire protection and induction/exhaust used on turbine aircraft engines. Students will inspect, service, and troubleshoot the ignition and ignition harness used on turbine engines. Student will remove, disassemble, inspect, and install starters, generators, alternators and engine instruments. Students will investigate induction and exhaust systems which will involve servicing and troubleshooting

**V. 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.

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

Jeppesen Maintenance

 A&P Technician

Powerplant Textbook

**VII. COURSE OBJECTIVES:**

Students will be able to:

• Inspect, service, troubleshoot, and repair turbine engine ignition systems

 and components (2)

• Inspect, service, troubleshoot, and repair turbine engine electrical

 starting systems (3)

• Inspect, service, and troubleshoot turbine engine pneumatic starting

 systems (1)

• Repair engine electrical system components (2)

• Install, check, and service engine electrical wiring, controls, switches,

 indicators, and protective devices (3)

• Inspect service and check generators and alternators for turbine

 engines (3)

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

 extinguishing systems. (3)

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

 control systems. (2)

• Inspect, check, service, troubleshoot and repair heat exchangers, turbine

 engine airflow and temperature control systems (1)

 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.

**VIII. 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.

**IX. COURSE OUTLINE:**

Weeks:

1. Induction systems, turbojet and turbofan inlets, subsonic inlets, supersonic inlets.

2. Turboprop inlets, inlet anti-ice systems.

3. Turbine engine exhaust systems, turbojet exhaust system, turbofan exhaust, turboprop exhaust, thrust-reversers, noise suppressors

Test 1

4. Electrical system components, wire types, wire marking, wiring installation, wiring terminals, connectors, terminal strips, bonding, circuit protection, switches, relays and solenoids.

5. Generator theory of operation, generator construction, generator ratings, generator voltage regulation, generator terminals, generator service and maintenance.

6. AC alternators, types of ac alternators, brushless alternators, alternator ratings, frequency, ac alternator maintenance, CSD’s, IDG’s.

7. AC motors, types of AC motors, universal motors, induction motors, synchronous motors.

Test 2

8. Turbine engine starter systems, electric starters, starter-generators, direct- cranking starters, air turbine starters, combustion starter.

9. Turbine engine ignition system, capacitor-discharge, low-tension system, high-tension system.

10. Igniters, ignition system inspection and maintenance, troubleshooting.

Test 3

11. Turbine engines lubrication systems, lubricating oils, system classification, oil filters.

12. Chip detectors, turbine engine lubrication system maintenance, oil change, oil servicing.

13. Fire protection systems, engine fire detection systems, thermocouple detector, Fenwal system, Kidde system, Lindberg system.

14. Systron-Donner system, smoke and toxic gas detection systems, inspection and testing.

15. Engine fire zones, fire extinguishing agents, fire extinguishing systems, inspection and servicing, 727 fire protection system.

16. Final test.

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

FAA AC-65-12A

Airframe and Powerplant Mechanics

Powerplant 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.