1. **COURSE TITLE\*: Turbine Engine II**
2. **CATALOG – PREFIX/COURSE NUMBER/COURSE SECTION\*: AVIT 2404**
3. **PREREQUISITE(S)\*: COREQUISITE(S)\*:**
4. **COURSE TIME/LOCATION/MODALITY: (*Course Syllabus – Individual Instructor Specific*)**
5. **CREDIT HOURS\*: 3 LECTURE HOURS\*: 2**

 **LABORATORY HOURS\*:1 (1.5 contact hrs) OBSERVATION HOURS\*:0**

1. **FACULTY CONTACT INFORMATION: *(Course Syllabus – Individual Instructor Specific)***
2. **COURSE DESCRIPTION\*:**

This course will introduce the student to the Turbine Engine Instrument Systems, Turbine Engine Fuel and Fuel Metering Systems, Turbine engine Ignition and Starting Systems, Turbine Engine Fire Protection Systems and Engine Inspection. Students will inspect, service, and troubleshoot the ignition and ignition harness used on turbine engines. Student will locate procedures for fuel and metering systems on turbine engines. Students will investigate induction and exhaust systems which will involve servicing and troubleshooting. Students will inspect a engine IAW approved procedures.

1. **LEARNING OUTCOMES\*:**

Students will gain knowledge of the following:

1. Fuel flow
2. Temperature
3. Engine speed indicating systems
4. Pressure
5. Annunciator indicating systems
6. Engine pressure ratio
7. Engine indicating and crew alerting system
8. Digital engine control module
9. Electronic centralized aircraft monitor
10. Engine instrument range markings and instrument conditions.
11. Digital engine control module
12. Hydromechanical fuel control system design and components
13. Fuel nozzles and manifolds design, operation, and maintenance
14. Components, theory, and operation of turbine engine fuel metering system.
15. Inspection requirements for an engine fuel system.
16. Fuel system operation
17. Fuel heaters
18. Fuel lines
19. Fuel pumps
20. Fuel valves.
21. Fuel filters
22. Ignition system theory.
23. Digital engine control module
24. Engine starters.
25. Turbine engine ignition systems.
26. Types of fires and engine fire zones.
27. Fire detection warning system operation
28. Fire detection system maintenance and inspection requirements
29. Fire extinguishing agents, types of systems, and operation.
30. Fire extinguishing system maintenance and inspection.
31. **ADOPTED TEXT(S)\*:**

FAA-H-8083-32 (Powerplant V0l 1&2)

 Aviation Maintenance Technician Handbook AC 43.13-1B/2B

<https://www.faa.gov/sites/faa.gov/files/regulations_policies/handbooks_manuals/aviation/FAA-H-8083-32-AMT-Powerplant-Vol-1.pdf>

<https://www.faa.gov/sites/faa.gov/files/regulations_policies/handbooks_manuals/aviation/FAA-H-8083-32-AMT-Powerplant-Vol-2.pdf>

<https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_43.13-1B_w-chg1.pdf>

<https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC%2043.13-2B.pdf>

**9a: SUPPLEMENTAL TEXTS APPROVED BY FULL TIME DEPARTMENTAL FACULTY (INSTRUCTOR MUST NOTIFY THE BOOKSTORE BEFORE THE TEXTBOOK ORDERING DEADLINE DATE PRIOR TO ADOPTION) \*\*\*.**

1. **OTHER REQUIRED MATERIALS: (SEE APPENDIX C FOR TECHNOLOGY REQUEST FORM.)\*\***
2. **GRADING SCALE\*\*\*:**

Grading will follow the policy in the catalog. The scale is as follows:

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.

1. **GRADING PROCEDURES OR ASSESSMENTS: (*Course Syllabus – Individual Instructor Specific)***

Test count – 40% of Final Grade

 Quizzes count – 10% of Final Grade

 Lab Grade counts – 50% of Final Grade

Class and lab attendance will be graded, two points will be deducted from the grade for each day missed. Quizzes cannot be made up. No test can be taken late without prior approval of the instructor.

1. **COURSE METHODOLOGY: *(Course Syllabus – Individual Instructor Specific)***

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.

**14. COURSE OUTLINE: *(Course Syllabus – Individual Instructor Specific)***

***(Insert sample course outline with learning outcomes tied to assignments / topics.)***

**Below is an example of how you might fill-in the course outline of classwork, assignments, tests, et al…**

|  |  |  |
| --- | --- | --- |
| **WEEK** | **DESCRIPTION** | **LEARNING OUTCOMES #** |
| WEEK 1 | Induction systems, turbojet and turbofan inlets, subsonic inlets, supersonic inlets. | 1, 2 ,3, 4 |
| WEEK 2 | Turboprop inlets, inlet anti-ice systems.  | 7, 10, 11 |
| WEEK 3 | Turbine engine exhaust systems, turbojet exhaust system, turbofan exhaust, turboprop exhaust, thrust-reversers, noise suppressors | 5, 6, 12, 13, 14 |
| WEEK 4 |  |  |
| WEEK 5 | Quiz 1 |  |
| WEEK 6 | Electrical system components, wire types, wire marking, wiring installation, wiring terminals, connectors, terminal strips, bonding, circuit protection, switches, relays and solenoids. | 8. 9 |
| WEEK 7 | Generator theory of operation, generator construction, generator ratings, generator voltage regulation, generator terminals, generator service and maintenance. | 15, 16 |
| WEEK 8 | AC alternators, types of ac alternators, brushless alternators, alternator  | 17, 18 |
| WEEK 9 | AC motors, types of AC motors, universal motors, induction motors, synchronous motors. | 19, 20, 21 |
| WEEK 10 | Test 1 |  |
| WEEK 11 | Turbine engine starter systems, electric starters, starter-generators, direct- | 23, 24 |
| WEEK 12 | Turbine engine ignition system, capacitor-discharge, low-tension system, high-tension system.  | 25 |
| WEEK 13 | Igniters, ignition system inspection and maintenance, troubleshooting. | 22 |
| WEEK 14 | Turbine engines lubrication systems, lubricating oils, system  | 26, 27, 28 |
| WEEK 15 | Chip detectors, turbine engine lubrication system maintenance, oil change, oil servicing. | 29, 30 |
| WEEK 16 | Final test |  |

* Induction systems, turbojet and turbofan inlets, subsonic inlets, supersonic inlets.
* Turboprop inlets, inlet anti-ice systems.
* Turbine engine exhaust systems, turbojet exhaust system, turbofan exhaust, turboprop exhaust, thrust-reversers, noise suppressors
	+ Quiz 1
* Electrical system components, wire types, wire marking, wiring installation, wiring terminals, connectors, terminal strips, bonding, circuit protection, switches, relays and solenoids.
* Generator theory of operation, generator construction, generator ratings, generator voltage regulation, generator terminals, generator service and maintenance.
* AC alternators, types of ac alternators, brushless alternators, alternator ratings, frequency, ac alternator maintenance, CSD’s, IDG’s.
* AC motors, types of AC motors, universal motors, induction motors, synchronous motors.
	+ Test 1
* Turbine engine starter systems, electric starters, starter-generators, direct- cranking starters, air turbine starters, combustion starter.
* Turbine engine ignition system, capacitor-discharge, low-tension system, high-tension system.
* Igniters, ignition system inspection and maintenance, troubleshooting.
* Turbine engines lubrication systems, lubricating oils, system classification, oil filters.
* Chip detectors, turbine engine lubrication system maintenance, oil change, oil servicing.
	+ Final test.

**15. SPECIFIC MANAGEMENT REQUIREMENTS\*\*\*:**

Class and lab attendance will be graded. Quizzes cannot be made up. No test can be taken late without prior approval of the instructor.

**16. FERPA:\***

Students need to understand that their 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.

**17. ACCOMMODATIONS: \***

Students requesting accommodations may contact Ryan Hall, Accessibility Coordinator at rhall21@sscc.edu or 937-393-3431, X 2604.

Students seeking a religious accommodation for absences permitted under Ohio’s Testing Your Faith Act must provide the instructor and the Academic Affairs office with written notice of the specific dates for which the student requires an accommodation and must do so no later than fourteen (14) days after the first day of instruction or fourteen (14) days before the dates of absence, whichever comes first. For more information about Religious Accommodations, contact Ryan Hall, Accessibility Coordinator at rhall21@sscc.edu or 937-393-3431 X 2604.

**18. OTHER INFORMATION\*\*\*:**

**SYLLABUS TEMPLATE KEY**

**\*** Item cannot be altered from that which is included in the master syllabus approved by the Curriculum Committee.

**\*\*** Any alteration or addition must be approved by the Curriculum Committee

**\*\*\*** Item should begin with language as approved in the master syllabus but may be added to at the discretion of the faculty member.