AMT A174: POWERPLANT IGNITION SYSTEMS - FAA

Item	Value
Curriculum Committee Approval Date	12/08/2021
Top Code	095020 - Aviation Powerplant Mechanics
Units	2.5 Total Units
Hours	81 Total Hours (Lecture Hours 27; Lab Hours 54)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	Yes
Basic Skills	Not Basic Skills (N)
Repeatable	No
Grading Policy	Standard Letter (S)

Course Description

Fundamental theory of ignition systems and practical experience in disassembly, repair, overhaul, inspection, and testing of ignition components. ADVISORY: AMT A151. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Inspect, check, service, and troubleshoot reciprocating and gas turbine engine ignition systems.

Course Objectives

- 1. Recognize, explain and illustrate the different sections and types of magnetos.
- 2. Apply principles in internal timing of a magneto and magneto to engine timing.
- 3. Explain procedures and perform tasks using appropriate reference material, for magneto disassembly, assembly and testing.
- 4. Interpret and use charts and diagrams to explain the operation of a magneto and ignition system.
- 5. Explain the operation and theory of auxiliary ignition systems for magnetos.
- 6. Apply principles in testing high voltage cables and ignition wiring to cylinder arrangements.
- 7. Apply principles in repairing shielded ignition wiring.
- 8. Explain the basic principles in spark plugs and turbine engine igniters; apply principles in inspecting, cleaning, testing, and identification of aviation spark plugs and turbine engine igniter plugs.
- 9. Compare and describe the difference between piston engine and turbine engine ignition systems.
- 10. Recognize, explain and illustrate the different types of turbine engine ignition systems.

Lecture Content

IGNITION SYSTEMS Overhaul magneto and ignition harness Disassemble, identify components and reassemble a magneto Inspect and select serviceable magneto breaker assemblies Internally time a magneto Assemble, operate and disassemble an impulse coupling on a magneto Inspect, service, troubleshoot and repair reciprocating and turbine engine ignition systems and components Inspect, check, troubleshoot, remove and reinstall wiring to an ignition switch Use an ignition harness tester to identify a shorted ignition lead on an engine Install, inspect, operate, troubleshoot and repair an ignition booster system Remove, inspect, recondition, test and reinstall spark plugs Time magnetos to an engine Identify, compare and interpret ignition analyzer patterns Compare and describe the difference between piston engine and turbine engine ignition systems Operate and test a magneto on a test bench Test and judge the serviceability of condensers Use a coil tester to test ignition coils Demonstrate the effect of faults in an ignition lead and correct the fault

Lab Content

Faculty input required.

Method(s) of Instruction

- Lecture (02)
- Lab (04)

Instructional Techniques

Instruction methodologies will include, but not necessarily be restricted to the following: 1. Detailed multimedia/lectures of each topic covered. 2. Student feedback during each lecture. 3. Detailed illustrative discussion of textbook examples. 4. Concentration on schematic reading and system operation fault diagnosis. 5 Practical troubleshooting. 6. Laboratory exercises pertaining to subjects discussed during which students work individually or in small groups.

Reading Assignments

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Writing Assignments

Student must show proficiency in writing logbook entries using correct punctuation, sentence structure and readability.

Out-of-class Assignments

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Demonstration of Critical Thinking

Interview, list, multiple choice exams, and short answer.

Required Writing, Problem Solving, Skills Demonstration

Student must show proficiency in writing logbook entries using correct punctuation, sentence structure and readability.

Textbooks Resources

1. Required Jeppesen. AC43.13-1B2A, Acceptable Methods, Techniques, and Practices-Aircraft Inspection and Repair, ed. Superintendent of Documents; U.S. Government Printing Office, 2001 Rationale: latest 2. Required Jeppesen. AP Technician “POWERPLANT” Textbook, ed. Englewood: Jeppesen Sanderson, 1998 Rationale: latest 3. Required Kroes, Michael J and Thomas Wild. Aircraft Powerplant, 7th ed. New York: Glencoe/McGraw-Hill, 1994 Rationale: latest