AMT A180: AIRFRAME AND POWERPLANT INSTRUMENTATION FAA

Item	Value
Curriculum Committee Approval Date	12/08/2021
Top Code	095000 - Aeronautical and Aviation Technology
Units	2.5 Total Units
Hours	76.5 Total Hours (Lecture Hours 31.5; Lab Hours 45)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Open Entry/Open Exit	No
Grading Policy	Standard Letter (S)

Course Description

A survey and limited practical experience of basic instrumentation systems used in private, corporate, and commercial aircraft. Included are aircraft nomenclature, acronyms, and use of computer-based training systems. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Apply principles in handling and storing instruments, install instruments in aircraft, and perform pitot/static instrument test.
2. Apply principles in troubleshooting temperature indicating system, manifold pressure systems, engine tachometer systems, pressure indicating and warning systems, and pressure and rate of flow indicating systems.

Course Objectives

- 1. Describe nomenclature and acronyms of individual instrument systems.
- 2. Describe function and application of individual instrumentation systems.
- 3. Discuss the interrelationship between individual instrumentation systems.
- 4. Examine the individual instrumentation system component structure and component location.
- 5. Develop communication skills to discuss individual instrumentation systems at an industrial level.
- I Aircraft Instrument System
- I. 1. Install instruments and perform static pressure system leak test.
- I. 2. Handle and store instruments accurately.
- I. 3. Install instrument panels and instruments.
- I. 4. Perform a static pressure system leak test.
- I. 5. Inspect, check, service, troubleshoot, and repair electronics flight instrument systems and both mechanical and electrical heading, speed, altitude, temperature, pressure, and position indicating systems to include the use of built-in test equipment.
- II Powerplant Instrument Systems
- II. 1. Inspect, check, service, troubleshoot and repair electrical and mechanical engine temperature pressure, and RPM indicating systems
- II. 2. Explain operating principles and installation practices of temperature indicating systems for aircraft engine instrumentation.
- II. 3. Check, troubleshoot and repair thermocouple and resistance/ration meter temperature indicating systems.
- II. 4. Explain purpose, operating principles, requirements and applications of manifold pressure indicating systems.
- II. 5. Inspect, check, troubleshoot and repair engine tachometer systems.
- II. 6. Explain purposes, operating principles, requirements and applications of engine inlet and outlet temperature indicating systems.
- II. 7. Explain purposes, operating principles and applications of pressure indicating and warning systems used with aircraft engines.
- II. 8. Troubleshoot, service, repair electrical and mechanical fluid rate-of-flow indicating system.

Lecture Content

AIRFRAME INSTRUMENTS SYSTEMS Handling and storing of instruments. Install instrument panels and instruments. Perform a static pressure leak test. Inspect, check service, troubleshoot, and repair instrument systems. Complete aircraft instrument CBT module. POWERPLANT INSTRUMENT SYSTEMS Operating principles and installation practices of temperature indicating systems for aircraft engine instrumentation. Check, troubleshoot, and repair thermocouple and resistance/ratio meter temperature indicating system. Operating principles, and troubleshooting of manifold pressure indicating systems. Inspect, check, troubleshoot, and repair engine tachometer systems. Operating principles, requirements, and applications of engine inlet and outlet temperature indicating systems. Operating principles, and applications of pressure indicating and warning systems used with aircraft engines. Inspect, troubleshoot, and service fluid rate of flow systems.

Lab Content

Faculty input required.

Method(s) of Instruction

- Lecture (02)
- Lab (04)

Instructional Techniques

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

Written examinations, student participation, oral check-outs, attendance, laboratory projects.

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 ?AIRFRAME? Textbook, ed. Englewood, CO: Jeppesen Sanderson, 2007 3. Required Jeppesen. AP Technician ?GENERAL? Textbook, ed. Englewood, CO: Jeppesen Sanderson, 2000 Rationale: latest 4. Required Kroes, Michael J., et al. . Aircraft Maintenance Repair, 6th ed. New York: Glencoe/McGraw-Hill, 2007 5. Required interAct. Aircraft Instrument Systems, 1st ed. Irvine, CA: Integrated Logistical International, 0 Rationale: -