RECPROCATING IGNITION SYSTEM
Course Syllabus

Course Number: TRPPM-3000  OHLAP Credit: No
OCAS Code: None
Course Length: 49 Hours
Career Cluster: Transportation, Distribution & Logistics
Career Pathway: Aviation Maintenance Technology
Career Major(s): Powerplant Mechanic

Pre-requisite(s):
Course Description: Magneto systems, test equipment, and spark plugs will be discussed. Students will remove, test, repair as needed and replace magnetos and spark plugs.

Textbooks:
Dale Crane, Dictionary of Aviation Terms, Aviation Supplies and Academics, 1997

Course Objectives:
A. Lesson: SAFETY
1. List safety precautions relating to reciprocating engines.
2. Discuss MSDS related to Powerplant 1.

B. Lesson: MAGNETO BASIC THEORY AND TEST EQUIPMENT
1. Define terms pertaining to reciprocating engine ignition systems.
2. Describe the basic operation of the four-cycle engine, including the four cycles and the ignition event.
3. Discuss the electrical operation of a battery ignition system.
4. Describe the basic components of a high-tension magneto system.
5. Describe the basic components of a low-tension magneto system.
6. Discuss the operating principles of a magneto.
7. List the components of a magneto’s mechanical system.
8. Describe the magneto’s magnetic circuit.
9. Describe types of induction associated with basic magneto operation.
10. List the components of a magneto’s primary electrical circuit.
11. List the components of a magneto’s secondary electrical circuit.
12. Describe the interaction between the magnetic circuit, and the primary and secondary electrical circuits in the operation of a magneto.
13. Discuss the relationship of the rotating speeds of the various components within a magneto to the crankshaft speeds of an engine.
14. Identify mechanical and electrical auxiliary starting system components.
15. Identify and discuss safe and proper operation of test equipment used in the shop.
16. Demonstrate safe and proper operation of test equipment used in the shop.
17. Disassemble a magneto. (Level 2) (App. D,II,E,17,18) (PP-L1)
20. Discuss various troubleshooting techniques or practices to be used on magnetos.
21. Identify and perform service procedures on magnetos. (Level 2) (App. D,II,E,18)
22. List procedures for installing a magneto.

C. Lesson: AIRCRAFT RECIPROCATING ENGINE IGNITION SYSTEMS
1. Discuss the construction and operation of an ignition harness.
2. Describe the installation techniques for ignition harnesses.
3. Discuss troubleshooting techniques and practices used on ignition harnesses.
5. Discuss inspection service and operation of spark plugs.

Teaching Methods:
The class will primarily be taught by the lecture and demonstration method and supported by various media materials to address various learning styles. There will be question and answer sessions over material covered in lecture and media presentations. Supervised lab time is provided for students to complete required projects.

Grading Procedures:
1. Students are graded on theory and shop practice and performance.
2. Each course must be passed with seventy (70%) percent or better.
3. Grading scale: A=90-100%, B=80-89%, C=70-79%, F=0-69%.

Description of Classroom, Laboratories, and Equipment:
Tulsa Technology Center campuses are owned and operated by Tulsa Technology Center School District No. 18. All programs provide students the opportunity to work with professionally certified instructors in modern, well-equipped facilities.

Available Certifications/College Credit:
The student may be eligible to take state, national or industry exam after completion of the program. College credit may be issued from Oklahoma State University-Okmulgee or Tulsa Community College. See program counselor for additional information.

College Credit Eligibility:
The student must maintain a grade point average of 2.0 or better.