# RECIPROCATING FUEL AND METERING

## Course Syllabus

<table>
<thead>
<tr>
<th>Course Number:</th>
<th>TRPPM-3001</th>
<th>OHLAP Credit:</th>
<th>No</th>
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<tbody>
<tr>
<td>OCAS Code:</td>
<td>None</td>
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<tr>
<td>Course Length:</td>
<td>63 Hours</td>
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<tr>
<td>Career Cluster:</td>
<td>Transportation, Distribution &amp; Logistics</td>
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<td>Career Pathway:</td>
<td>Aviation Maintenance Technology</td>
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<tr>
<td>Career Major(s):</td>
<td>Powerplant Mechanic</td>
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### Pre-requisite(s):

- Reciprocating engine fuel systems will be studied. Aircraft fuel systems, engine fuel metering devices, engine induction systems and engine cooling systems will be inspected, checked, adjusted and repaired as necessary.

### Textbooks:


### Course Objectives:

**A. Lesson: TERMS AND SAFETY**

1. Define terms and definitions related to fuel and fuel metering systems.
2. List safety hazards associated with fuel systems and fueling operations.
3. Identify and practice fuel safety precautions.

**B. Lesson: AVIATION FUELS**

1. Discuss types and grades of aviation fuel
2. Explain the purpose of a Reid Vapor pressure bomb.
3. Define octane number and performance number.
4. Discuss types, detection, and prevention of fuel contamination.
5. Discuss the combustion process.

**C. Lesson: FUEL SYSTEMS**

1. List requirements of a fuel system.
2. Compare and contrast gravity-feed and pressure fuel systems.
3. Define vapor lock.
4. List fuel system components and their locations.
5. Identify and discuss the purpose and operation of fuel system components.
6. Discuss troubleshooting and maintenance of fuel system components.
7. Discuss inspection and replacement of powerplant external units and systems.

**D. Lesson: RECIPROCATING ENGINE FUEL METERING DEVICES**

1. Discuss air/fuel mixture ratios.
2. Discuss principles of carburetion.
3. Discuss the purpose, construction, and operation of float-type carburetors.
4. Discuss troubleshooting and maintenance of float-type carburetors.
5. Disassemble, clean, inspect, reassemble, and adjust a float-type carburetor.
6. Discuss the purpose and operation of pressure injection carburetor systems.
7. Discuss troubleshooting and maintenance of pressure injection carburetors.
8. Discuss the operating principles of the Bendix RSA fuel injection system.
9. Discuss the operating principles of the Teledyne Continental fuel injection system.
10. Discuss the operating principles of a direct fuel injection system.
11. Discuss fuel injection systems maintenance practices.
12. Discuss the purpose, construction, and operation of reciprocating engine water injection systems.

E. Lesson: RECIPROCATING ENGINE INDUCTION SYSTEMS
1. Identify induction system components.
2. Discuss types of air filters.
3. Describe the types of fuel system icing.
4. Discuss the types and prevention of carburetor icing. (PP-O4)
5. Discuss manifold pressure.
7. Describe supercharging limitations and altitude effects on engine power. (Level 1) (App. D,II,H,27)
8. Discuss inspecting, checking, troubleshooting, and repairing of internal superchargers. (Level 1) (App. D,I,A,1; D,II,H,27) (PP-O7,O19)
10. Discuss the purpose and operation of turbocharger control systems. (Level 1) (App. D,II,H,27)
11. Discuss turbocharger construction.
12. Discuss inspecting, servicing, troubleshooting, and repairing of turbochargers and turbocharger control systems. (Level 1) (App. D,II,H,27)

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.
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.

The student must maintain a grade point average of 2.0 or better.