FUEL, FIRE, ICE, RAIN SYSTEMS  
Course Syllabus

Course Number: TRAM-2100  
OHLAP Credit: No  
OCAS Code: None  
Course Length: 56 Hours  
Career Cluster: Transportation, Distribution & Logistics  
Career Pathway: Aviation Maintenance Technology  
Career Major(s): Airframe Mechanic

Pre-requisite(s):  

Course Description: Fuel, fire detection, fire protection, and ice and rain control systems will be studied. Hands-on inspection, troubleshooting, and repair of systems will be accomplished in the course.

Textbooks:  
Dale Crane, Dictionary of Aviation Terms, Aviation Supplies and Academics, 1997  
DOT, Aircraft Inspection and Repair, Jeppesen, Sanders, Inc., 1998

Course Objectives:  

A. Lesson: FUEL SYSTEMS  
1. Define terms related to aircraft fuel systems.  
2. Compare the operations and requirements of gravity feed and pressure feed fuel systems.  
3. Discuss construction and design of aircraft fuel tanks and required markings for fuel filler openings.  
4. Describe the operation of fuel system components. (AF-P10, P11 – P14)  
5. Discuss fuel indicating systems and components.  
6. Describe fuel jettison systems and requirements. (Level 1) (App. C,II,F,41)  
8. Discuss aircraft fueling and defueling procedures. (Level 1) (App. C,II,F,42)(AF-P6)  
9. Discuss troubleshooting, inspection, and repair of aircraft fuel systems. (AF-P18,P20)  
10. Describe pressure fueling systems.  
11. Discuss inspection, checking, and repairing pressure fueling systems. (Level 1) (App. C,II,F,43)  
12. § Remove, check, and reinstall a fuel tank. (Level 2) (App. C,II,F,44) (AF- P1, P2, P3, P19)  
13. § Remove, clean, inspect, and re-install a fuel strainer. (Level 3) (App. C,II,F,44,47) (AF-P7)  
14. § Calibrate liquidometer-type fluid quantity indicating systems. (Level 2) (App. C,II,F,45) ( AF-P8,P9,P17)  
15. § Test and adjust fluid pressure and temperature warning systems. (Level 2) (App. C,II,F,46) (AF-P15,P16)
FUEL/FIRE/ICE/RAIN SYSTEMS

B. Lesson: FIRE PROTECTION SYSTEMS
1. Define terms related to fire protection and detection systems.
2. Discuss fire classifications and zones.

C. Lesson: FIRE DETECTION AND EXTINGUISHING SYSTEMS
1. Define terms related to fire protection, detection, and extinguishing systems.
2. Identify fire detection systems and components.
3. Discuss smoke detection systems and components. (Level 1) (App. C,II,J,54)
4. Describe carbon monoxide detection systems and components. (Level 1) (App. C,II,J,54) (AF-T1,T2)
5. List fire extinguishing agents, systems, and components.
6. § Inspect and troubleshoot a fire detection system. (Level 3) (App. C,II,J,55) (AF-T3,T4,T5,T6,T7,T8,T9,T10,T11)
7. § Inspect and troubleshoot a fixed fire extinguishing system. (Level 3) (App. C,II,J,55) (AF-T12,T13,T14,T15,T16,T17,T18,T19,T20)

D. Lesson: ICE AND RAIN CONTROL SYSTEMS
1. Define terms related to ice and rain control systems.
2. Distinguish between types and effects of ice formation.
3. Explain the construction, operation, and maintenance of de-icing systems. (AF-S8)
4. Explain the construction, operation, and maintenance of anti-icing systems. (AF-S9,S10,S11)
5. Discuss removal of snow and ice prior to flight.
6. Discuss the construction, operation, and maintenance of rain removal systems. (AF-S12,S13,S14,S15,S16,S17,S18)
7. § Perform an operational check of pneumatic de-ice boots. (Level 2) (App. C,II,I,53) (AF-S2)
8. § Inspect and preserve de-ice boots. (Level 2) (App. C,II,I,53) (AF-1,S3,S4,S5,S6,S7)

E. Lesson: OPERATION, MAINTENANCE, REPAIR AND TROUBLESHOOTING OF FIRE SYSTEMS
1. Discuss types and operation of fire detection and protection systems.
2. Describe the routing of fire warning sensors.
3. Discuss installation procedures of fire warning sensors.
4. Discuss troubleshooting, maintenance and repair of fire detection systems.

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%.
**FUEL/FIRE/ICE/RAIN SYSTEMS**

<table>
<thead>
<tr>
<th>Description of Classroom, Laboratories, and Equipment:</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Available Certifications/College Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>College Credit Eligibility:</th>
</tr>
</thead>
<tbody>
<tr>
<td>The student must maintain a grade point average of 2.0 or better.</td>
</tr>
</tbody>
</table>