I. Course Number: AERM 1351

II. Course Title: Aircraft Turbine Engine Theory

III. Instructional Time:

Semester ------ 3 hours
Lecture ------- 28 hours
Lab ------------ 56 hours
Final Test ----- 1 hour
Total Clock -- 85 hours

IV. Course Description:

Theory, history, and servicing of turbine engines to include lubrication, instrumentation, auxiliary power units, and exhaust systems.

V. Course Learning Outcomes:

Describe how a turbine engine works; and inspect, service, troubleshoot, and repair turbine engine ignition systems and components and electrical and pneumatic starting systems. Identify and select lubricants; repair engine lubrication system components; and inspect, check, service, troubleshoot, and repair engine lubrication systems. Inspect and troubleshoot unducted systems and components; inspect, check, service, and troubleshoot turbine driven auxiliary power units; repair engine exhaust system components; and inspect, check, troubleshoot, service, and repair engine exhaust systems. Troubleshoot and repair engine thrust reverser systems and related components; troubleshoot, service, and repair electrical and mechanical fluid rate of flow indicating systems; and inspect, check, service, troubleshoot, and repair electrical and mechanical engine temperature, pressure, and r.p.m. indicating systems.

VI. Program Objectives:

Level 2 A. Inspect, service, troubleshoot, and repair turbine engine ignition systems and components.

Level 3 B. Inspect, service, troubleshoot, and repair turbine engine electrical starting systems.

Level 1 C. Inspect, service, and troubleshoot turbine engine pneumatic starting systems.

Level 2 D. Identify and select turbine engine lubricants.

Level 2 E. Repair turbine engine lubricating system components.

Level 3 F. Inspect, check, service, troubleshoot, and repair turbine engine lubricating systems.
Level 1 G. Inspect and troubleshoot unducted fan systems and components.

Level 1 H. Inspect, check, service and troubleshoot turbine-driven auxiliary power units.

Level 2 I. Repair turbine engine exhaust system components.

Level 3 J. Inspect, check, troubleshoot, service, and repair turbine engine exhaust systems.

Level 1 K. Troubleshoot, and repair engine-thrust reverser systems and related components.

Level 2 L. Troubleshoot, service, and repair electrical and mechanical fluid rate-of-flow indicating systems for turbine engines.

Level 3 M. Inspect, check, service, troubleshoot, and repair electrical and mechanical turbine engine temperature, pressure, and r.p.m. indicating systems.

VII. Practical Projects:

A. Simulate maintenance of turbine engine ignition systems and components.

B. Perform maintenance of turbine engine electrical starting systems.

C. Research maintenance of turbine engine pneumatic starting systems.

D. Simulate the identification and selection of turbine engine lubricants.

E. Simulate repairs on turbine engine lubricating system components.

F. Perform maintenance on turbine engine lubricating systems.

G. Research unducted fan systems and components.

H. Research maintenance of turbine-driven auxiliary power units.

I. Simulate repairs on turbine engine exhaust system components.

J. Perform maintenance on turbine engine exhaust systems.

K. Research maintenance of turbine engine thrust reverser systems.

L. Simulate maintenance of fluid rate-of-flow indicating systems for turbine engines.

M. Perform maintenance of turbine engine indicating systems.
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VIII. Teaching Methods:

To include lecture, discussion, audio/visual aids, computer based training, hand outs, and reference materials.

IX. Evaluation:

Evaluation methods for this course are as follows:

A. Quizzes: Informal quizzes may be administered periodically to measure student progress and to identify significant learning problems. The quiz type (multiple choice, oral, essay, etc.) and the frequency of administration shall be at the discretion of the instructor. Quiz grades are not used in computing course grades.

B. Practical Projects and Mid-term Tests: At the completion of instruction of an objective, the students performance will be evaluated by a knowledge test and/or a practical project. Mid-term tests grades are averaged with Practical Projects grades.

C. Final Examination: A final exam will be administered at the conclusion of the course and shall be comprehensive of the entire course.

D. Grading: A percentage grading system shall be used and the student's final grade shall be computed as follows:

<table>
<thead>
<tr>
<th>Practical Projects and Mid-term Test</th>
<th>65%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Examination</td>
<td>35%</td>
</tr>
</tbody>
</table>

E. Final percentage grades shall be converted to letter grades as follows:

| 90-100 | A     |
| 80-89  | B     |
| 70-79  | C     |
| 60-69  | D     |
| 59-0   | F     |

X. Tools and Equipment:

Special tools and equipment required for this unit are to be furnished by Coastal Bend College. All hand tools, however, are to be furnished by the individual student and shall be immediately available to the student at the beginning of this course of instruction.
XI. Attendance Policy:

Refer to the Coastal Bend College Airframe & Power Technology Program attendance policy.

XII. Bibliography:

A. Required Text:


2. AC 43.13-1B/2A, Acceptable Methods, Techniques, and Practices, Aircraft Inspection and Repair, Department of Transportation, Federal Aviation Administration, Jeppesen Sanderson, Inc.

B. Supplementary Text:


5. A&P Technician Powerplant Workbook, Jeppesen Sanderson, Inc.

6. Aircraft Manufacturers Specifications and/or Support Material.