I. Course Number: AERM 1444

II. Course Title: Aircraft Reciprocating Engines

III. Instructional Time:

   Semester ------  4 hours
   Lecture -------- 42 hours
   Lab ------------  56 hours
   Final Test ------  1 hour
   Total Clock ---- 99 hours

IV. Course Description:

   A study of reciprocating engines and their development, operating principles, and theory.
   Instruction in engine instruments, lubricating, and exhaust systems.

V. Course Learning Outcomes:

   Identify the components of a reciprocating engine; demonstrate the proper use of manuals and reference materials; and inspect, troubleshoot, check, service, and repair engine instrument systems.
   Inspect, service, and repair lubrication and exhaust systems.

VI. Program Objectives:

   Level  1  A. Inspect and repair a radial engine.

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

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

   Level  2  D. Identify and select reciprocating engine lubricants.

   Level  2  E. Repair reciprocating engine lubrication system components.

   Level  3  F. Inspect, check, service, troubleshoot, and repair reciprocating engine lubrication systems.

   Level  2  G. Repair reciprocating engine exhaust system components.

   Level  3  H. Inspect, check, troubleshoot, service, and repair reciprocating engine exhaust systems.
VII. Practical Projects:

   A. Research radial engine maintenance.

   B. Simulate maintenance of fluid rate-of-flow indicating systems for reciprocating engines.

   C. Perform maintenance of reciprocating engine indicating systems.

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

   E. Simulate repairs on reciprocating engine lubricating system components.

   F. Perform maintenance on reciprocating engine lubricating systems.

   G. Simulate repairs on reciprocating engine exhaust system components.

   H. Perform maintenance on reciprocating engine exhaust systems.

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:

       Practical Projects and Mid-term Test  65%
       Final Examination                 35%

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

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Letter</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-100</td>
<td>A</td>
</tr>
<tr>
<td>80-89</td>
<td>B</td>
</tr>
<tr>
<td>70-79</td>
<td>C</td>
</tr>
<tr>
<td>60-69</td>
<td>D</td>
</tr>
<tr>
<td>59-00</td>
<td>F</td>
</tr>
</tbody>
</table>

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.