Engineering and Technology Education Department
Semester Course Syllabus
Fall 2008

AV 2110 - AIRCRAFT RECIPROCATING POWERPLANTS & ACCESSORIES LAB
3 Credits

Instructor: Randy Chesley
Room T 103

1. Catalog Description

Theory of operation, maintenance, and repair of reciprocating engines, exhaust systems, ignition systems, and fuel systems with laboratory applications of principles and components studied.

II. Course Objective

The objective of the powerplant laboratory is to gain an applied understanding of aircraft powerplant maintenance. Upon completion, each student will be able to achieve the level of proficiency indicated by the number in parenthesis.

Teaching Level

A. **RECIPROCATING ENGINES**

(2) 1. Overhaul reciprocating engines in accordance with manufacturing instructions:
(3) 2. Inspect, check, service, and repair opposed and radial engines and reciprocating\ engine installations
(3) 3. Install, troubleshot, and remove reciprocating engines

B. INDUCTION SYSTEMS

(2) 1. Inspect, check, troubleshoot, service, and repair engine ice and rain control systems
(2) 2. Inspect, check, service, and repair heat exchangers, and superchargers
(3) 3. Inspect, check, service, and repair carburetor air intake and induction manifolds

C. LUBRICATION SYSTEMS

(3) 1. Identify and select lubricants
(2) 2. Repair engine lubrication system components
(3) 3. Inspect, check, service, troubleshoot, and repair engine lubrication systems

D. ENGINE COOLING SYSTEMS

(2) 1. Repair engine cooling system components
(3) 2. Inspect, check, troubleshoot, service, and repair engine cooling systems

E. IGNITION AND STARTING SYSTEMS

(2) 1. Overhaul magneto and ignition harness
(2) 2. Inspect, service, troubleshoot, and repair reciprocating and turbine engine ignition systems and components
(3) 3. Inspect, service, troubleshoot, and repair turbine engine electrical starting systems
(1) 4. Inspect, service, troubleshoot, and repair turbine engine pneumatic starting systems

F. FUEL AND FUEL METERING SYSTEMS

(3) 1. Overhaul carburetors (4 each)
(3) 2. Repair engine fuel metering system components
(3) 3. Inspect, check, service, troubleshoot, and repair reciprocating engines

G. ENGINE INSTRUMENT SYSTEMS

(2) 1. Troubleshoot, service, and repair fluid rate-of-flow indicating systems
(3) 2. Inspect, check, service, troubleshoot, and repair engine temperature, pressure, and R.P.M. indicating systems

III. Text

AC 43.13-1A, Acceptable Practices
A&P Technician Powerplant Textbook ISBN 0-88487-207-6
Manufacturer's Maintenance and OH Manuals

IV. Grades

Determined by the total points of examinations, quizzes, and lab assignments. At least two major exams will be given.

A	=	90 - 100%
B	=	80 - 89%
C	=	70 - 79%
D	=	60 - 69%
F	=	Below 63%

V. Examination Schedule

Lab Projects	400 points
Midterm	200 points
Instructor Evaluation	200 points
Final Examination	200 points
Total	1000 points

VI. Laboratory

Projects will be assigned to coincide with the material taught in the lecture. Each student will complete all lab projects to the satisfaction of the instructor and to the level of instruction specified by FAR 147 Appendix A and B.

VII. Attendance

Attendance is required for all A & P students, and a sign-in and sign-out sheet will be available. It is important to record your daily attendance. This becomes part of your personal school records as required by FAR 147. If a student does not meet the attendance requirements, he/she will not be permitted to take the FAA Airframe or Powerplant exams. All absences must be made up. A minimum of 165 clock hours are required in this course.

VIII. Lab Fee

A lab fee of $55.00 is required and will be paid at registration. Aircraft engines and their accessories are very expensive, and we try to use your lab fees wisely. Please be careful with the lab equipment to help keep the lab fees to a minimum. Lab fees will be used for the purchase of materials such as:

Tools required for engine overhaul	Engine components required for engine overhaul
Engine lubricants Engine fuel	Engine hardware Magnetos
Harnesses and magneto components	Carburetor components Shop rags

IX. Accommodation for Persons with Disabilities

If a student has a disability that will likely require some accommodation by the instructor, the student must contact the instructor and document the disability through the Disability resource Center, preferably during the first week of the course. Any request for special considerations relating to attendance, pedagogy, taking of examinations, etc., must be discussed with and approved by the instructor. In cooperation with the Disability Resource Center, course materials can be provided in alternative formats--large print, audio, diskette, or Braille.

X. Safety Rules (for labs in Room T-109)

Safety rules should be followed throughout the lab. Always keep in mind it only takes seconds to be hurt but weeks, months, or years to recover. Some simple rules follow. Safety glasses are required in labs and must be worn at all times.

1. Don’t operate any kind of equipment without the proper eye protection or clothing
2. Keep the floor free from liquids that will cause a person to slip
3. Don’t horse around; that can innocently cause an accident
4. Don’t use equipment that you’re not familiar with
5. Keep your work area clean and organized
6. Use cloth rags to keep your hands and tools as clean as possible and discard in proper containers
7. Follow any instruction that you may receive from the university staff
8. Use only approved liquids for cleaning
9. Don’t misuse the tools or equipment
10. Dress appropriately (no sandals or open toed shoes, excessively loose clothing….)

Note: The last ten minutes of class time should be used for cleaning up the areas used during lab time. Secure tools and equipment and swee0p the floor. Your help in keeping the lab clean and organized will be an asset to your education and training for years to come. All special tools must be returned to cabinets at the end of each day. **The last hour of lab on Thursdays will be devoted to intense lab cleanup.**

XI. Tools

Students will be required to provide their own tools included on a minimum tool list. This list is based on an industry wide minimum tool list for a new hire employee. A secure storage area will be provided for the tools. However, the student is solely responsible for his/her own tools.

We have arrangements with Snap-on tools, MAC tools, and Sears Craftsman tools for student discounts, some of which are substantial. It is the student's choice of which brand tools to own.

Snap-on will give the students a 50% discount on a fixed tool set.

Sears Craftsman will give a 10% discount on any tool with a current student I.D. This must be with one of the major Sears outlets such as Ogden or Salt Lake City.

If the student cannot afford to provide their own tools, he/she can rent a tool box from the Maintenance Management program for the semester. They will be responsible for replacing any lost or broken tools with identical tools.

Student financial aid services are aware of the added financial burden of the tools required, and there are accommodations for additional funding.