

**SAN JOSE STATE UNIVERSITY**  
**College of Engineering**  
**Department of Aviation & Technology**  
**Aviation 043 - Propulsion Theory-Reciprocating Engines**  
**Section 01 (lecture) and Section 11/12 (labs) Spring 2014**

**Instructor:** Daniel L. Neal

**Office Locations:** RHV Faculty Offices (RHV 110) and IS 133D

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**Office Hours:** Mondays 1700-1750 or by appointment at IS 133D. Wednesdays and Thursdays 1700-1750 or by appointment at RHV

**Class Days/Time:** Class (Section 1) Mon 1800-1945  
Labs: Section 11 Wednesdays & Section 12 Thursdays 1800-2045

**Classroom:** Section 1(lecture) – IS 216, Sections 11/12(labs) RHV 110 & 120

**Prerequisites:** Physics 2A

**COURSE OUTLINE**

**Course Description:**

Students will learn the operational and analytical aspects of the propulsion theory of reciprocating aircraft engines, aircraft fuel systems and components, fundamental systems, maintainability and reliability methods, and regulations related to engines. Students will understand aircraft engine maintenance requirements and will perform key maintenance activities. Students will acquire an understanding of cockpit operational conditions and the effect of aircraft engine performance parameters on cockpit indications.

Lab activities will involve operation, servicing, troubleshooting and maintaining aircraft piston engines.

## **Course Objectives:**

Upon completion of this course, students will be able to:

- Describe the general operating characteristics of typical reciprocating engines and their systems/components.
- Apply knowledge from the prerequisite courses to analyze reciprocating engine performance.
- Apply knowledge from the above objectives to the current operational and maintenance practices for aircraft engines.
- Understand FAA regulations that apply to aircraft engines.
- Perform preventive maintenance to aircraft engines and understand required maintenance practices.

## **Canvas:**

Course materials such as the syllabus, major assignment handouts, lab assignments, and lecture notes are available on the Canvas site for the Avia 43 course. Registered students will be added to the Avia 43 Canvas shell. The Canvas login is located here: <https://idp01.sjsu.edu/idp/Authn/UserPassword> Use your student ID and MySJSU password to log in.

## **Required Text:**

Kroes, Aircraft Powerplants, Glencoe Aviation Technology Series, 8<sup>th</sup> Edition (2014)

## **Other Reading:**

FAR/AIM Federal Aviation Regulations (2014 revision) – this publication is available at no cost online at the FAA website here: <http://www.ecfr.gov/> (use this truncated link and select Title 14 of the CFR for the Federal Aviation Regulations)

## **Evaluation Criteria & Weights:**

Mid-Term Exams (2)	30%
Final Comprehensive Exam	25%
Homework, quizzes, and lab quizzes	5%
Lab Performance and Lab Reports	40%
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Total	100%

A = 100% to 90%

B = 89% to 80%

C = 79% to 70%

D = 69% to 60%

F = < 59%

**Late assignments will be assessed a 25% penalty. There will be no make-ups for missed quizzes. There will be no make-ups for missed exams, unless prior arrangements are made with the instructor.**

**Classroom and Protocol:**

Do not use cell phones during class. It is acceptable to use your tablet or laptop during class to look up information pertinent to the lecture. It is not acceptable to watch unrelated videos or participate in online gaming during class. Students are expected to attend class regularly, arrive on time and be prepared to participate.

**Dropping and Adding:**

Students are responsible for understanding the policies and procedures about add/drop, grade forgiveness, etc. Refer to the current semester's Catalog Policies section at <http://info.sjsu.edu/static/catalog/policies.html>. Add/drop deadlines are as follows: Tuesday February 4<sup>th</sup> – last day to drop without a “W” grade for Spring 2014. The Late Drop Policy is available at <http://www.sjsu.edu/aars/policies/latedrops/policy/>. Students should be aware of the current deadlines and penalties for dropping classes.

Information about the latest changes and news is available at the Advising Hub at <http://www.sjsu.edu/advising/>.

**Academic Integrity:**

Your commitment as a student to learning is evidenced by your enrollment at San Jose State University. The University's Academic Integrity policy, located at <http://www.sjsu.edu/senate/S07-2.htm>, requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The Student Conduct and Ethical Development website is available at [http://www.sa.sjsu.edu/judicial\\_affairs/index.html](http://www.sa.sjsu.edu/judicial_affairs/index.html).

Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person's ideas without giving proper credit) will result in a failing grade and sanctions by the University. For this class, all assignments are to be completed by the individual student unless otherwise specified. If you would like to include your assignment or any material you have submitted, or plan to submit for another class, please note that SJSU's Academic Policy S07-2 requires approval of instructors.

**Campus Policy in Compliance with the American Disabilities Act:**

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with the Disability Resource Center (DRC) at <http://www.drc.sjsu.edu/> to establish a record of their disability.

## **Lab Requirements:**

### **General:**

Do not use cell phones during lab. Do not bring food or drinks into the lab/hanger while lab activities are in progress. Students are expected to attend lab regularly, arrive on time and be prepared to participate.

### **Lab Reports:**

There will be approximately six lab reports assigned to document your lab activities. These reports will make up 40% of your grade, so it is important to submit university quality work on time. Most of the reports are assigned as individual reports. Some are allowed to be submitted as a group report. It is each student's responsibility to make sure that his/her lab reports are submitted on time. Group reports must be submitted with a memo style cover sheet and all participating student names must be typed in the "from" line. Adding a student name to the memo with a pen or pencil is an indication that the added student didn't actually participate in the preparation of that report. This action is considered cheating by all of the submitting students. Students attempting to do this will receive a "0" on that report. We will discuss lab reports at length during the first lab session. All lab reports are expected to be typed. Raw data collected as notes in lab can be attached as an appendix.

### **Lab Safety:**

Students are required to wear safety glasses and closed toe shoes in the lab at any time that lab activities are in progress. Students are required to come equipped with safety glasses that meet the ANSI Z87.1-2010 specification. These are available at the Spartan Bookstore, and at Lowes, Home Depot, or Orchard Supply Hardware (and at just about any other hardware store). The lab/hanger is not temperature controlled; dress accordingly. Lab activities require the use of tools, aircraft and engines. You may get dirty, so dress accordingly.

### **Tools and equipment:**

Use the correct tool(s) for the job and use them correctly. If you cannot locate tools, check with the instructor. Notify the instructor of any missing or broken tools or equipment.

Lab projects, engines and parts will be handled and organized properly at all times.

The lab/hanger must be left clean and orderly each day. All tools and equipment must be cleaned and returned to their proper location. Work benches must be wiped down, floors swept, and seats pushed under tables/benches.

This semester there are two lab sessions, so projects cannot be left on the work benches when your lab session ends. The work bench areas will be needed by the other lab students in the opposite section.

