

**San José State University**  
**Department of Aviation and Technology**  
**Aviation 91, Aircraft Turbine Engines**  
**Fall 2013**

<b>Instructor:</b>	Mr. Dennis Romano
<b>Office Location:</b>	Industrial Studies 104
<b>Telephone:</b>	(408) 924-3194
<b>Email:</b>	Dennis.Romano@sjsu.edu
<b>Lecture Notes and other Class Information posted at:</b>	<a href="http://www.engr.sjsu.edu/dromano/">http://www.engr.sjsu.edu/dromano/</a>
<b>Office Hours:</b>	Tuesdays 1400-1500, other times by arrangement
<b>Class Days/Time:</b>	Tuesdays and Thursdays 1500-1615
<b>Classroom:</b>	Industrial Studies 216
<b>Prerequisites:</b>	Avia 43

Lecture slides presented in class and other course material will be posted at:  
<http://www.engr.sjsu.edu/dromano/> The material will normally be posted the evening of the class meeting in which it was discussed.

### **Course Description**

A study of gas turbine fundamentals, including various gas turbine cycles, components and component efficiency, thrust specific fuel consumption, duct flow and inlet diffuser, centrifugal and axial compressors, combustion chambers and jet nozzles for aircraft propulsion. Aviation regulations related to engines. Maintenance cycles for engines and components.

### **Course Learning Outcomes (CLO)**

At the end of the semester, the student should understand:

- The types and uses of gas turbine engines
- The fundamental design and operating principles of the components of turbine engines
- The systems required by a turbine engine
- The safe operation of the turbine engine on the ground and in flight
- The methods of manufacture, testing, operation and maintenance of turbine engines

## Required Text

Kroes & Wild, Aircraft Powerplants, Glencoe Aviation Technology Series, 7<sup>th</sup> Edition (1995)  
ISBN 0-02-801874-5

## Course Requirements and Assignments

**Homework** will be due one week after it is assigned unless otherwise noted. **Late homework will not be accepted**, as it will be discussed in class the day it is due. If you cannot attend class the day that a homework assignment is due, it may be emailed to the instructor prior to the start of class. Homework assignments must be typed. The homework assignment with the lowest grade will be dropped.

**Examinations:** There will be two mid-term exams and a final examination. There will be no make-ups for missed exams, unless a written medical excuse is provided. **Laptops, cell phones and notes are not allowed during exams.**

## Grading Policy

### Evaluation:

	<u>Percentage</u>
Homework	15%
2 Mid-term Exams	25% each
1 Final Exam	35%
<b>TOTAL</b>	<u><b>100%</b></u>

The first two mid-term exams will cover the material discussed during that portion of the course. The final exam will cover the entire course.

### Average Grade

94-100	A
90-93	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
70-72	C-
60-69	D
below 60	F

Note: Grading will be based on either the percentages noted above, or pending overall class performance, the instructor may elect to apply a grading curve.

## **Classroom Protocol**

To facilitate learning, **please have all cell phones on “silent” during class.** Please **do not send text messages during class**, as this is a distraction to you and the other students. Computers may be used for taking notes, but other uses are a distraction and not permitted. No food is allowed in the classroom or lab. Students are expected to attend class regularly, arrive on time and be prepared to participate. For safety, closed toe shoes are required for any lab activities in the aircraft hangar areas.

## **University Policies**

### **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](http://info.sjsu.edu/static/catalog/policies.html) section at <http://info.sjsu.edu/static/catalog/policies.html>. Add/drop deadlines can be found on the current academic year calendars document on the [Academic Calendars webpage](http://www.sjsu.edu/provost/services/academic_calendars/) at [http://www.sjsu.edu/provost/services/academic\\_calendars/](http://www.sjsu.edu/provost/services/academic_calendars/). The [Late Drop Policy](http://www.sjsu.edu/aars/policies/latedrops/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](http://www.sjsu.edu/advising/) at <http://www.sjsu.edu/advising/>.

### **Consent for Recording of Class and Public Sharing of Instructor Material**

[University Policy S12-7](http://www.sjsu.edu/senate/docs/S12-7.pdf), <http://www.sjsu.edu/senate/docs/S12-7.pdf>, requires students to obtain instructor’s permission to record the course.

- Common courtesy and professional behavior dictate that you notify someone when you are recording him/her. You must obtain the instructor’s permission to make audio or video recordings in this class. Such permission allows the recordings to be used for your private, study purposes only. The recordings are the intellectual property of the instructor; you have not been given any rights to reproduce or distribute the material.
  - Contact the instructor if you wish permission to record any part of the course.
- Course material developed by the instructor is the intellectual property of the instructor and cannot be shared publicly without his approval. You may not publicly share or upload instructor generated material for this course such as exam questions, lecture notes, or homework solutions without instructor consent.

## **Academic integrity**

Your commitment as a student to learning is evidenced by your enrollment at San Jose State University. The [University Academic Integrity Policy S07-2](http://www.sjsu.edu/senate/docs/S07-2.pdf) at <http://www.sjsu.edu/senate/docs/S07-2.pdf> 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](http://www.sjsu.edu/studentconduct/) is available at <http://www.sjsu.edu/studentconduct/>.

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 Integrity 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](http://www.sjsu.edu/president/docs/directives/PD_1997-03.pdf) at [http://www.sjsu.edu/president/docs/directives/PD\\_1997-03.pdf](http://www.sjsu.edu/president/docs/directives/PD_1997-03.pdf) requires that students with disabilities requesting accommodations must register with the [Accessible Education Center](http://www.sjsu.edu/aec) (AEC) at <http://www.sjsu.edu/aec> to establish a record of their disability.

In 2013, the Disability Resource Center changed its name to be known as the Accessible Education Center, to incorporate a philosophy of accessible education for students with disabilities. The new name change reflects the broad scope of attention and support to SJSU students with disabilities and the University's continued advocacy and commitment to increasing accessibility and inclusivity on campus.

## **Student Technology Resources**

Computer labs for student use are available in the [Academic Success Center](http://www.sjsu.edu/at/asc/) at <http://www.sjsu.edu/at/asc/> located on the 1st floor of Clark Hall and in the Associated Students Lab on the 2nd floor of the Student Union. Additional computer labs may be available in your department/college. Computers are also available in the Martin Luther King Library.

A wide variety of audio-visual equipment is available for student checkout from Media Services located in IRC 112. These items include DV and HD digital camcorders; digital still cameras; video, slide and overhead projectors; DVD, CD, and audiotape players; sound systems, wireless microphones, projection screens and monitors.

## Learning Assistance Resource Center

The Learning Assistance Resource Center (LARC) is located in Room 600 in the Student Services Center. It is designed to assist students in the development of their full academic potential and to inspire them to become independent learners. The Center's tutors are trained and nationally certified by the College Reading and Learning Association (CRLA). They provide content-based tutoring in many lower division courses (some upper division) as well as writing and study skills assistance. Small group, individual, and drop-in tutoring are available. Please visit [the LARC website](http://www.sjsu.edu/larc/) for more information at <http://www.sjsu.edu/larc/>.

## SJSU Writing Center

The SJSU Writing Center is located in Clark Hall, Suite 126. All Writing Specialists have gone through a rigorous hiring process, and they are well trained to assist all students at all levels within all disciplines to become better writers. In addition to one-on-one tutoring services, the Writing Center also offers workshops every semester on a variety of writing topics. To make an appointment or to refer to the numerous online resources offered through the Writing Center, visit the **Writing Center website** at <http://www.sjsu.edu/writingcenter>. For additional resources and updated information, follow the Writing Center on Twitter and become a fan of the SJSU Writing Center on Facebook. (Note: You need to have a QR



Reader to scan this code.)

# Aviation 91, Aircraft Turbine Engines Fall 2013

## Course Schedule

*August 22, 2013*

*Note that this schedule is subject to change. I will attempt notify everyone not later than the class meeting prior to the change, via email, or both.*

<b>Week</b>	<b>Date</b>	<b>Topics</b>	<b>Reading Assignment</b>
1	8/22	Introduction	Syllabus
2	8/27	Theory, Design, Types, FAA Regulations Part 1	pp. 273-279
	8/29	Operating principles	pp. 279-287
3	9/3	Turbine engine Components and design details	pp. 287-308
	9/5		
4	9/10	Fuels and fuel systems	pp. 309-341
	9/12		
5	9/17	Ignition and starting systems	pp. 357-372
	9/19		
6	9/24	Lubricants and lubrication systems	
	9/26	Review	
7	10/1	<b>Mid-term Exam 1</b> – Material from Weeks 1-5	pp. 343-356
	10/3	Lubricants and lubrication systems (continued)	
8	10/8	Turbofan engines	pp. 373-435
	10/10		
9	10/15	Turboprop engines	pp. 437-478
	10/17		
10	10/22	Turboprop engines (continued)	pp. 569-600
	10/24		
11	10/29	Turbopropellers and control systems	pp. 479-497
	10/31		
12	11/5	Review	
	11/7	<b>Mid-term Exam 2</b> – Material from Weeks 6-11	
13	11/12	Turboshaft engines	pp. 643-666
	11/14		

14	11/19	Engine indication & control; fire warning & protection	
	11/21		
15	11/26	FAA Regulations Part 2 Operation, inspection, troubleshooting, maintenance, and overhaul	pp. 499-536
	11/28	<b>No Class - Thanksgiving</b>	
16	12/3	Week 15 topics continued	
	12/5	<u>Last day of class:</u> Course Wrap-up & Final exam review	
17	<b>12/16 (Mon)</b>	<b>FINAL EXAM – 1445-1700</b>	