San José State University
Aerospace Engineering
AE167, Aerospace Propulsion, Spring 2021

Course and Contact Information

Instructor:	Prof. Fabrizio Vergine
Office Location:	E272B
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Email:	fabrizio.vergine@sjsu.edu
Office Hours:	Monday, from 3:00pm to 4:00pm Tuesday, from 2:00pm to 3:00pm *Please follow the ZOOM link below to access office hours*: https://sjsu.zoom.us/j/82345024070
Class Days/Time:	Monday, Wednesday, 1:30pm 2:45pm
Classroom:	Online. *Please follow the link below to register to the ZOOM meetings*: https://sjsu.zoom.us/meeting/register/tZwkcOCgrzMiGt1jvVcCVMe6IMXWtGIdUi7j Passcode: 421133
Prerequisites:	

Course Format

Faculty Web Page and MYSJSU Messaging

Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on Canvas Learning Management System course login website at http://sjsu.instructure.com. You are responsible for regularly checking the email address listed in your MySJSU at http://my.sjsu.edu profile and the Canvas Inbox to learn of any updates.

Course Description

Overall performance characteristics of propellers, ramjets, turbojets, turbofans, rockets. Performance analysis of inlets, exhaust nozzles, compressors, burners, and turbines. Rocket flight performance, single-/multi-stage chemical rockets, liquid/solid propellants and design problems.

Course Goals

Introduce students to the basic principles and design of:

Air-breathing propulsion systems.

The work must be hand-written on white paper only and scans must be submitted on Canvas at the end of the test.

Classroom Protocol

Students will be muted upon entry in the Zoom meeting of each lecture: but they can raise their hand electronically or unmute themselves at any time to ask questions, reply to questions and make comments.

Be mindful of background noise and distractions
extent possible. Avoid video setups where people may be walking behind you, people talking/making noise etc. Avoid activities that could create additional noise, such as shuffling paper, listening to music in the background, etc.

Position your camera properly: be sure your webcam is in a stable position and focused at eye level.

Limit your distractions/avoid multitasking: you can make it easier to focus on the meeting by turning off notifications, closing or minimizing running apps, and putting your smartphone away (unless you are using it to access Zoom).

Use appropriate virtual backgrounds: if using a virtual background, it should be appropriate and professional and should NOT suggest or include content that is objectively offensive or demeaning.

Technical difficulties

Internet connection issues:
Canvas automatically saves responses a few times per minute as long as there is an internet connection. If your internet connection is lost, Canvas will warn you but allow you to continue working on your exam. A brief loss of internet connection is unlikely to cause you to lose your work. However, a longer loss of connectivity or weak/unstable connection may jeopardize your exam.
Other technical difficulties:
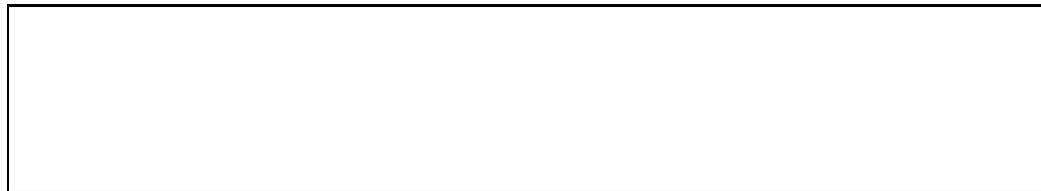
University Policies

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on [Syllabus Information web page](http://www.sjsu.edu/gup/syllabusinfo/) at http://www.sjsu.edu/gup/syllabusinfo/.

AE Department and SJSU policies are also posted at http://www.sjsu.edu/ae/programs/policies/

AE 167 / Aerospace Propulsion, Spring 2021, Course Schedule

The schedule may be subject to change. Any changes will be notified with fair notice through official announcements both in class and on Canvas.

Course Schedule

Week	Date	Topics, Readings, Assignments, Deadlines
1		**Introduction** - Brief historical background. - Classification of aerospace engines.
2		**Review of aerothermodynamics for engine analysis** - I and II law of thermodynamics. - Thermodynamic cycles. - Control volume analysis.
3		**Aircraft gas turbine engine** - Uninstalled and installed thrust. - Gas turbine engine components. - Joule-Brayton cycle.
4		**Parametric cycle analysis of ideal engines** - Turbojet. - Turbojet with afterburner.
5		**Parametric cycle analysis of ideal engines** - Turbofan.
6		**Parametric cycle analysis of ideal engines** - Ramjet.
7		**Component Performance Analysis** - Subsonic inlets.
8		**Component Performance Analysis** - Supersonic inlets.
9		**Component Performance Analysis** - Compressors.
10		**Component Performance Analysis** - Turbines.
11		**Component Performance Analysis** - Combustors and Nozzles.
12		**Parametric cycle analysis of real engines** - Turbojet. - Turbojet with Afterburner.
13		**Rocket Propulsion** - Thrust equation. - Equation of motion for an accelerating rocket.
14		**Rocket Propulsion** - Multi-stage rockets.
15		**Rocket Propulsion** - Liquid propellant rocket engines.

Week	Date	Topics, Readings, Assignments, Deadlines