

San José State University
Aerospace Engineering Department
AE 15, Air & Space Flight: Past, Present, and Future. Section 01, Fall 2022

Course and Contact Information

Instructor: Emily Pippin

Email: emily.pippin@sjsu.edu
Office Hours: By appointment
Class Days/Time: M 6:30 pm to 7:20 pm
Classroom: Engineering Building 407

Course Description

Introduction to the history, basic principles, current and future developments of the aerospace engineering field.

Course Goals

To introduce students to:

- The historical context in which aeronautical and astronautical systems have been developed.
- The basic principles of atmospheric flight and aircraft design.
- The basic principles of space flight and spacecraft design.
- The current and future developments in the field of aerospace engineering, the aerospace engineering industry status and outlook.

Course Learning Outcomes (CLO)

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

1. Identify the major milestones in the history of atmospheric and space flight, explain the driving forces behind each milestone, and discuss the impact on society and globalization.
2. Explain how aerospace vehicles generate lift and calculate lift using approximate methods.
3. Explain how aerospace vehicles generate drag at various flight regimes and calculate drag using approximate methods.
4. Communicate and collaborate effectively with teammates (by setting goals, managing time, resolving conflicts, delegating tasks, making critical decisions, etc.) while working on aerospace engineering problems.
5. Identify current and future development in aerospace engineering and discuss the challenges facing the aerospace industry in the 21st century.

Required Texts/Readings

Textbook

No required textbook.

Other Readings

Readings will be provided on Canvas throughout the semester.

Course Requirements and Assignments

“Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally three hours per unit per week) for instruction, preparation/studying, or course related activities, including but not limited to internships, labs, and clinical practica. Other course structures will have equivalent workload expectations as described in the syllabus.”

Homework

Homework assignments will consist of writing responses to open-ended questions. Homework assignments will be announced at least a week in advance.

Quizzes

3-4 short in class quizzes will be given throughout the semester with advanced notice.

Final Project

Students must submit a final project in place of the final exam. Students have flexibility in proposing a project as long as the project is related to aerospace, but it must be approved. Students doing projects will give a presentation to the class and submit a written report. Potential projects include:

- Give a presentation on an aircraft or spacecraft you are interested in.
- Rocket project launched off campus.
- Case study on a failed aircraft or spacecraft.
- Observe in person a high power rocket launch and present or write about what you observed.

Grading Information

- In-Class Work and Homework: 40%
- Quizzes: 25%
- Final Project: 35%

<i>Grade</i>	<i>Percentage</i>
<i>A plus</i>	<i>96 to 100%</i>
<i>A</i>	<i>93 to 95%</i>
<i>A minus</i>	<i>90 to 92%</i>
<i>B plus</i>	<i>86 to 89 %</i>
<i>B</i>	<i>83 to 85%</i>
<i>B minus</i>	<i>80 to 82%</i>
<i>C plus</i>	<i>76 to 79%</i>
<i>C</i>	<i>73 to 75%</i>
<i>C minus</i>	<i>70 to 72%</i>

<i>Grade</i>	<i>Percentage</i>
<i>D plus</i>	<i>66 to 69%</i>
<i>D</i>	<i>63 to 65%</i>
<i>D minus</i>	<i>60 to 62%</i>

University Policies

Per [University Policy S16-9](#), relevant university policy concerning all courses, such as student responsibilities, academic integrity, accommodations, dropping and adding, consent for recording of class, etc. and available student services (e.g. learning assistance, counseling, and other resources) are listed on [Syllabus Information web page](https://www.sjsu.edu/curriculum/courses/syllabus-info.php) (<https://www.sjsu.edu/curriculum/courses/syllabus-info.php>). Make sure to visit this page to review and be aware of these university policies and resources.

AE Department policies can be found at <http://www.sjsu.edu/ae/programs/policies/>

AE-15 Fall 2022 Course Schedule

Tentative and subject to change. See CANVAS for updated schedule

Module	Topics
1	Introduction / Early Aviation
2	Aircraft Basics
3	WWI
4	Golden Age
5	Guest Speaker (Guidance Navigation and Controls Engineer)
6	Helicopters
7	Early Rocketry
8	The Space Race
9	Launch Vehicles
10	Airliners
11	Guest Speaker (Rocket Propulsion Development Engineer)
12	SpaceX
13	Spy Planes or Unmanned Aircraft
14	Current and Future Aircraft