

THE UNIVERSITY OF COLORADO BOULDER

ASEN 3711: Aerodynamics Spring 2024

SYLLABUS

Instructors: Professor Kenneth Jansen
E-Mail Address: kenneth.jansen@colorado.edu
Office Hours Times/Location:
Friday 11AM (AERO 356)
Tuesday 10AM (ZOOM)

Lecture Time/Location: AERO 120 Monday/Wednesday/Friday, 8:30 – 9:20 AM

Teaching Assistant: Jaylon McGhee
E-Mail Address: jaylon.mcghee@colorado.edu
Office Hours Times/Location: Wednesday, 5 – 6 PM (AERO 303)
Tuesday, 5:30 – 7:00 PM (AERO N111)
Thursday 5:30 – 7:00 PM (AERO N111)

Teaching Fellows: Anshul Jain
E-Mail Address: Anshul.Jain@colorado.edu

1. Fundamentals

- a. Vector Calculus
- b. Fluid Mechanics
- c. Aerodynamics
- d. Gas Dynamics

2. Origins of Lift

- a. Airfoils and Circulation
- b. Subsonic Wings
- c. Wing Sweep
- d. Supersonic Wings

3. Origins of Drag

- a. Skin Friction Drag
- b. Form Drag
- c. Induced Drag
- d. Transonic Compressibility Drag
- e. Supersonic Wave Drag

4. Modeling and Prediction of Lift and Drag

- a. Potential Flow Theory
- b. Incompressible Thin Airfoil Theory
- c. Compressible Thin Airfoil Theory
- d. Panel Methods
- e. Prandtl Lifting Line Theory

Textbook, References, and Material:

Grading:

Course grades will be assigned based on the following percentages:

Homework will be assigned every Friday during lecture to be due the next Friday at the start of lecture. **Homework assignments are due on Canvas at the start of lecture on the due date.** If you must miss class for an excused absence, you may submit your homework early. Late assignments will not be accepted under any circumstance. However, the lowest homework grade will be dropped. Each homework assignment will be worth 10 points. Homework submissions will be graded for “completeness”, and solutions will be posted for self-assessment of “correctness”.

Collaboration is permitted on homework. You may discuss the means and methods for formulating

Exam 1, February 19, 2024: Fundamentals and Potential Flow

Exam 2, March 8, 2024: Incompressible Flow About Airfoils and Finite Wings

Exam 3, April 24, 2024: Compressible Flow and Shock Waves

The midterm exams will cover all material in the course including lectures, readings, and assignments.

Each midterm exam will consist of two parts. The first part will be fully closed book and will test understanding of concepts. The second part will be closed book except for a crib sheet and will involve derivation and problem solving. Collaboration on the midterm exams will not be tolerated. Students who are caught in these activities will receive an “F” for the course and reported to the Dean’s office for further punitive action.

There will be no makeup midterm exams. If you are unable to attend a

There will be reading assignments associated with each lecture. These assignments may be found on the course schedule. These reading assignments are to be completed before the lecture. The lecture and discussions should help to clarify and supplement what you have read.

Attendance Policy:

Students are highly encouraged to attend all scheduled lectures. Expect new material to be presented in the lecture. Exams will cover all the material in the course, including lecture and

Ability to appreciate ethical, economic, historical, and technical context (O1, O2)

Classroom Behavior

Students and faculty are responsible for maintaining an appropriate learning environment in all instructional settings, whether in person, remote, or online. Failure to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation, or political philosophy.

For more information, see the [classroom behavior policy](#), the [Student Code of Conduct](#), and the

names and pronouns are listed on instructors' class rosters. In the absence of such updates, the name that appears on the class roster is the student's legal name.

Honor Code

All students enrolled in a University of Colorado Boulder course are responsible for knowing and adhering to the [Honor Code](#). Violations of the Honor Code may include but are not limited to: plagiarism (including use of paper writing services or technology [such as essay bots]), cheating, fabrication, lying, bribery, threat, unauthorized access to academic materials, clicker fraud, submitting the same or similar work in more than one course without permission from all course instructors involved, and aiding academic dishonesty.

All incidents of academic misconduct will be reported to Student Conduct & Conflict Resolution: honor@colorado.edu, 303-492-5550. Students found responsible for violating the [Honor Code](#) will

