1THE UNIVERSITY OF COLORADO BOULDER

ASEN 3111: Aerodynamics
Spring 2020

SYLLABUS

Instructors:

Professor Kenneth Jansen (Lecture Instructor)
E-Mail Address: jansenke@colorado.edu
Office Hours Location: AERO 363
Office Hours Times: Wednesday 12:50-2:00,
                                        TBD

Professor Brian Argrow (Lab Instructor)
E-mail Address: Brian.Argrow@colorado.edu
Office Hours Location: AERO 224N
Office Hours Times: Monday 8:30 am -9:30

Course Objectives:

The primary course objective is to develop a fundamental understanding of the origins and magnitude of aerodynamic forces and moments, primarily on aircraft where they provide the lift and

Course Website and E-mail List:

C	73.00 – 76.99	2.00
C-	70.00 – 72.99	1.67

awarded only if a student selects a solution method, applies it, and obtains an answer. If a student does not execute all three of these steps, he or she will not receive "completeness" credit for the given problem. Only one problem associated with an assignment will count toward the "correctness" score. 3 of the 5 "correctness" points will be associated with correctness of solution methodology, while 2 of the 5 "correctness" points will be associated with correctness of the final answer. There will generally be no partial credit associated with "correctness".

Reading Quiz Policy:

There will be 4-6 random reading quizzes in lecture throughout the semester. These will be worth 10 points each. The reading quizzes will cover material assigned in readings that should be completed prior to the start of the lecture as well as material discussed in prior lecture periods. There will be no make-up reading quizzes. However, the lowest reading quiz grade will be dropped.

Lab Quiz Policy:

There will be 4-6 random lab quizzes in lab throughout the semester. These will be worth 10 points each. The lab quizzes will cover material associated with the laboratory exercises (both the computational assignments, the experimental lab, and the CFD lab) as well as material presented or discussed in lab. There will be no make-up lab quizzes. However, the lowest lab quiz grade will be dropped.

Homework Submission Policy:

All homework must be on 8.5 x 11-inch paper. You may use ruled notebook paper, but blank paper or engineering paper is much preferred. Use only the front side of engineering paper. Do not submit assignments on spiral notebook paper with ripped edges. Multiple pages must be stapled in the upper

For each computational assignment, code must be submitted, including a "driver" MATLAB script producing all requested figures. Code must be written individually. If you have collaborated with others while designing your code, be sure to credit them in a comment section at the top of your "driver" MATLAB script.

Further guidelines for the code submission will be given in class.

Experimental Wind Tunnel Lab Policy:

There will be one experimental lab: "Examination of the Wake Behind Aerodynamic Bodies". The experimental lab is more complex than hands-on homework and requires special equipment such as the educational wind tunnel in the PILOT Lab.

Collaboration is permitted on the experimental laboratory work. You may discuss the means and methods for collecting and analyzing the data and even compare answers, but you are not free to copy someone else's work.

Your experimental lab report should be completed using a word processor or desktop publishing package such as Microsoft Word or LaTeX. In your report you should include an acknowledgement section, and identify all of the group members who collaborated in the data collection and credit any other individuals whom you worked with in the data analysis.

Further guidelines for the experimental lab report write-up and submission will be given in class.

Computational Fluid Dynamics Lab Policy:

There will be one computational fluid dynamics lab: "Computational Fluid Dynamics (CFD) Simulation of Aerodynamic Bodies." In this lab you will simulate aerodynamics of a simple wing section using a commercial CFD software package (i.e. a "virtual wind tunnel").

You will carry-out the simulations individually, and will also submit an individual report detailing your work and findings. Collaboration is permitted on the CFD laboratory work. You may discuss the means and methods for simulating the flow and analyzing the data and even compare answers, but you are not free to copy someone else's work.

Your CFD lab report should be completed using a word processor or desktop publishing package such as Microsoft Word or LaTeX. In your report you should include an acknowledgement section,

and credit any other individuals whom you worked with in the CFD simulation or data analysis.

Further guidelines for the computational fluid dynamics lab report write-up and submission will be given in class.

Reading Assignments Policy:

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

Attendance Policy:

Attendance is expected at all scheduled lecture and laboratory periods. Expect new material to be presented in both the lecture and laboratory periods. Exams will cover all the material in the course, including lecture, discussions, homework, and laboratory exercises.

Evaluated Outcomes:

The Department of Aerospace Engineering Sciences has adopted a policy of assigning grades to "evaluated outcomes" in each course:

O1:	Professional context and expectations
O2:	Current and historical perspective
O3:	Multidisciplinary systems perspective
O4:	Written, oral, and graphical communication ability
O5:	Knowledge of key scientific/engineering concepts
O6:	Ability to define and conduct experiments and use experimentation
O7:	Ability to lead independently and find information
O8:	Ability to work in teams
O9:	Ability to design
O10:	Ability to formulate and solve problems
O11:	Ability to use and program computers

Evaluation of these outcomes allows an assessment of your performances and provides a major portion of the process we, the Faculty, use for continuous assessment and improvement of the entire AES undergraduate curriculum. The model for these outcomes derives from several sources including the *Desired Attributes of an Engineer* as defined by The Boeing Company and "curriculum reviews" from major aerospace corporations including The Boeing Company, Lockheed Martin Corporation, and Ball Aerospace Corporation. These inputs were combined with the AES faculty vision of the desired attributes of an aerospace engineer and the requirements of the Accreditation Board for Engineering and Technology (ABET) to produce this list of evaluated outcomes. Each assignment is designed and graded to assess some combination of these outcomes.

For ASEN 3111, these outcomes are grouped according to:
            !   Knowledge of scientific and engineering principles (O5)

- ! Ability to formulate and solve problems (O7, O10)
- ! Ability to develop and use computer programs (O11)
- ! Ability to design with a multidisciplinary systems perspective (O3, O9)
- ! Ability to work in a team (O8)
- ! Ability to communicate effective (O4)
- ! Ability to design and conduct experiments (O6)
- ! Ability to appreciate ethical, economic, historical, and technical context (O1, O2)

Accommodation for Disabilities:

If you qualify for accommodations because of a disability, please submit your accommodation letter from Disability Services to your faculty member in a timely manner so that your needs can be

can be found on the [OIEC website](). Please know that faculty and instructors have a responsibility to inform OIEC when made aware of incidents of sexual misconduct, discrimination, harassment, and/or related retaliation, to ensure that individuals impacted receive information about options for reporting and support resources.

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 policy may include: plagiarism, 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 the Honor Code (honor@colorado.edu