ASEN 2802 – Fall 2024

Aerospace Sciences Lab 1

Meeting Location: Fridays 8:30 AM - 4:35 PM in AERO 150 (PILOT)

8:30-10:20
1035-12:25
12:40-2:30
2:45-4:35

Instructor:
Bobby Hodgkinson
Office:

Teaching Assistants:

Chloe Long

Dominic Micelli

Sara Parker

Class Web Site: _____

Prerequisites:
ASEN 1320 or CHEN 1310 or CSCI 1300 or 1310 or 1320 or ECEN 1310

Corequisites:
ASEN 2012 & ASEN 2701 and ASEN 2702

Required Equipment: A way to submit work as a PDF. Recommended software: MATLAB. Recommended: Safety glasses/goggles for lab activities.

Course Objectives: Introduce the fundamental concepts, principles, and analytical tools of aerospace engineering, and reinforce concepts in ASEN 2701 and ASEN 2702 through a variety of experiential learning activities. This laboratory course provides a basic introduction to: Model-based design for real-world aerospace engineering systems, experimental data collection, and interpretation of experimental data using theoretical principles and analysis. The above topics are explored in the context of statics, structural mechanics, aerodynamics, and thermodynamics. A student who successfully completes this course will have a level of

competency in the topics above so they can use this expertise in the design of operational aircraft and spacecraft.

Grading Guidelines:

Group Work:	Lab Assignments* (2 assignments)	40%
	Weekly group deliverables	10%
Individual Work:	Weekly status updates	30%
	Peer Engagement	20%
		100%

*Individual grades for lab assignments may be adjusted by instructor(s) based on peer evaluations. Exemplary peer evaluations may result in an increased individual lab assignment grade whereas poor peer evaluations will result in a lower assigned grade. Individuals whose name does not appear on a group submission will not receive credit for the assignment. Groups are encouraged to leave off the names of individuals who did not contribute to the lab assignment.

AES department policy: group work grade only counts towards final grade if the total individual grade is C or better.

Grading Philosophy: Your letter grades will be assigned based on expectations of performance. A letter grade of 'A' represents superior/excellent performance, a grade of 'B' represents good/better than average performance, while a grade of 'C' represents competent/average performance (which is in accordance with CU grading policy). Typically, a performance of 70% would earn you a grade of 'C', however, we reserve the right to normalize the class grades based on the expected minimum level of competency.

- 2 (two) Lab Assignments: The submission of lab assignments will be a combination of short answer responses, condensed lab reports, and/or presentations. Details will be provided during the lab experience.

- Weekly group deliverables: Instructional team will visit each group during the lab period and assess the group's progress relative to the provided guidelines. Credit will be given to groups that are on or ahead of schedule. These will be informal visits intended to provide guidance but groups are encouraged to prepare brief documentation on the status of the progress related to the expected progress.

- Weekly status updates: Individuals will submit weekly updates to provide information on the individual's contributions to the assignment and the group's status in the given timeframe. These status updates are expected to range from one to approximately five sentences. Up to two total missed timesheets will be forgiven at instructor's discretion. Late status updates will not be accepted under any circumstance. Status updates will be reviewed for completeness and effort by the instructional team. Status updates will be

awarded credit based on perceived effort and clarity. See 'Important note' below, individuals who claim credit for another's work may be in violation of the University Honor Code, action will be taken at the discretion of the instructor.

- Peer engagement: Instructional team will award credit for active participation in the lab environment and positive evaluations from peers. The expectation is that each and every member of the group will contribute to the assignment. Individuals who do not meet this expectation will not be awarded full credit for peer engagement.

Important note: It is the responsibility of all group members to contribute to the assignment, this means it is not the group's responsibility to contact the individual to provide a list of individual tasks. In the event an individual does not appear to meet the group's workload expectations, the group is encouraged to contact the instructor to ask for help well ahead of the assignment deadline. Groups are encouraged to only list named authors who actively contributed to the completion of the assignment. Named authors will receive credit for the assignment.

See the course schedule for important dates related to lab assignment submissions and assessments.

Additional notes and class policies:

1. We reserve the right to make changes to the weekly course schedule based on occurring events that require different dispositions. We will give sufficient advance notice through announcements in class and posting on the website. Changes to this syllabus and schedule may be announced at any time during class periods. We will post the current syllabus and schedule on the course website.
2. The primary means for general course announcements will be via course-wide Canvas announcement. Please ensure you have enabled notifications. Emails to the instructor should occur if you experience a medical/family emergency, or if you are struggling in the course and need to discuss success strategies. Emails will be responded to during business hours, i.e. Monday through Friday, 8:00 am – 5:00 pm.
3. Please note in case of a medical/family emergency, you should contact the office of Student Support and Case Management here: <https://www.colorado.edu/studentaffairs/sscm>. They will help you coordinate across ALL of your courses and can put you in touch with a number of campus resources.
4. We reserve the right to make changes to the weekly course schedule based on occurring events that require different dispositions. We will give sufficient advance notice through announcements in class and posting on the web. Changes to this syllabus and assignments-table may be announced at any time during class periods. We will post the current syllabus and assignments-table on the web.
5. Experimental lab reports should be completed using a digital word processing program (Word, LaTeX, PDF, etc). All group member names with relevant assignment information must appear on the cover page. Bottom line - submit all work with a professional appearance. Neatness, clarity, and completeness really do count in the work world! Detailed guidelines for laboratory reports and presentations will be distributed and reviewed separately. Labs are written up and presented in groups, and initially graded as a group effort. Final individual

grades for each lab assignment, however, will reflect an anonymous peer evaluation of the group members and professor assessment. The peer assessment is a multiplying factor that can significantly alter your individual grade relative to the group grade. This is done to promote fairness in assigning group grades where individual contributions to the group's work may be unequal, but also to promote equal contribution from all group members. Use of MATLAB is required unless otherwise stated for labs.

6. Attendance at all scheduled lab times is recommended. Participation in lab activities is required. Participation will be determined based on peer evaluations and in lab observations by the instructional team.
7. Lab documents will be provided before the labs, which provide a detailed description of each lab's steps and milestones. You must carefully study the lab documents before each lab section begins. These lab documents will also include guidelines for the individual and group work that needs to be submitted for each lab.
8. The university expects a minimum of 100 minutes of out-of-class work per week for a 1 credit lab course (~25 hours total over the semester). Students will be expected to review posted material prior to lab and work on lab related assignments outside of the normal meeting times. <https://www.colorado.edu/registrar/faculty-staff/curriculum/courses/contact-hours#lecture_lec_-2101>
9. Any medical or studies-related needs of absence you know of prior to class must be communicated and approved by the instructor at least 2 weeks ahead of the date of occurrence.
10. In this class, we will *exclusively* use the programming language MATLAB because it is the programming language of the aerospace industry. Students who do not have a background in MATLAB are strongly encouraged to use the supplementary textbook and attend the TA's programming help sessions and office hours. MATLAB is available for a free download to your computer from the University.
11. (Adopted from: Ethan Mollick: < https://www.oneusefulthing.org/p/my-class-required-ai-heres-what-ive >) In this course, students are encouraged to leverage AI-based platforms to enhance the quality of their work, particularly for improving the clarity, grammatical correctness, and organization of written submissions. AI can be a powerful tool when used effectively, but its limitations must be clearly understood and managed. Any work that involves AI assistance must include a disclaimer acknowledging the use of such tools. For example, a suitable disclaimer might read: "This work utilized ChatGPT to refine the clarity of the writing and to assist with generating plots in MATLAB." Proper attribution is essential, as taking credit for work that is not your own, whether from a person or an AI, is a violation of the Honor Code.

    AI should be treated as an "assistant" or "confident teammate"—useful but not infallible. Students are strongly cautioned against relying on AI for understanding core engineering concepts, as these platforms often present incorrect information with undue confidence. Always verify any facts or calculations with your own work or trusted sources. When using AI, you are responsible for both the output and how you use it. Providing low-effort prompts will yield low-quality responses, while well-crafted prompts can significantly improve AI

outputs. However, remember that AI tools are not infallible—especially in technical areas like math or fact-based reasoning. Be skeptical, double-check all AI-generated content, and never accept it without scrutiny. To maintain academic integrity, any assignment that involves AI use must include a statement explaining how AI was used, what prompts were given (or a summary), and what insights you gained about better using AI through this process. Failure to provide this information may be considered a violation of academic honesty policies. Please note that this AI policy applies solely to this course and should not be assumed to apply in other courses. The College and University do not yet have a unified AI policy. For further guidance on responsible AI use, please refer to the resources available here: <https://www.colorado.edu/information-technology/artificial-intelligence-cu-boulder>

12. The instructional team may use AI technologies to enhance the efficiency and efficacy of administrative tasks, including supporting the grading process for lab assignments and other coursework. While AI tools may be employed to provide insights or even generate preliminary numerical values, these values will not be solely responsible for determining the final grade on any assignment. Instead, a human-generated score will serve as the primary assessment, with AI outputs acting only as one of several factors considered during the grading process. We recognize inconsistent performance in generating repeatable scores prevents AI from being relied upon as the sole determiner of your grade.
13. Assignment Regrade Policy: If you would like to submit a regrade request for any assignments you must submit a regrade request via email to the instructor within 2 weeks of the graded assignment return date. All regrade requests will be reviewed and approved by a course instructor and not teaching assistants, teaching fellows, or lab assistants.
    a. The regrade request must clearly state the reason you are requesting the regrade, and what you believe the correct grade to be. Note that disagreement on the established rubric allocation of points is not a valid reason for regrade and will not be considered.
    b. The regrade request must include in a single combined .pdf: an introductory statement addressing the above, a .pdf copy of the original submission with portions highlighted that pertain to the regrade request, and any additional information.
    c. Points can be added OR removed based on correctness. Therefore, if a mistake was made in grading and too few points were awarded, the regrade request may increase the final score, however if the professor finds a mistake was made in grading and too many points were awarded, then the regrade request may lower the final score.
    d. Regrades made in the final month of the course will only be entertained if the regrade alters an individual's final letter grade.
14. ***Safety is priority #1 in the in-person laboratory***. Anyone violating rules of safe conduct may receive a zero for the laboratory exercise and may be restricted from the lab facilities. Use of lab facilities is a privilege, not a right, and you must conduct yourself according to the lab rules and regulations. Those endangering themselves, others, or laboratory equipment by their unsafe conduct will not maintain their access privileges. Failure to wear appropriate safety gear will result in a 10% grade penalty for the lab for each infraction.

15. **Professional behavior and considerate communication practices are expected at all times.** Any questions, comments or concerns you may have should be respectfully voiced to your peers or the professor either in person or via email.
16. **Eating and drinking inside the laboratory is strictly prohibited.**

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

O1	Professional context and expectations (ethics, economics, etc.)
O3	Multidisciplinary, systems perspective
O4	Written, oral, graphical communication ability
O5	Knowledge of key scientific/engineering concepts
O6	Ability to define and conduct experiments, use instrumentation
O7	Ability to learn independently, find information
O8	Ability to work in teams
O9	Ability to design systems
O10	Ability to formulate and solve problems
O11	Ability to use and program computers

Evaluation of these outcomes allows an assessment of your performance 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 Co., Lockheed Martin Corp., and Ball Aerospace Corp. 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.

Required Statements

From: https://www.colorado.edu/academicaffairs/policies-customs-guidelines/required-syllabus-statements

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 Office of Institutional Equity and Compliance.

Requirements for Infectious Diseases

Members of the CU Boulder community and visitors to campus must follow university, department, and building health and safety requirements and all public health orders to reduce the risk of spreading infectious diseases.

The CU Boulder campus is currently mask optional. However, if masks are again required in classrooms, students who fail to adhere to masking requirements will be asked to leave class. Students who do not leave class when asked or who refuse to comply with these requirements will be referred to Student Conduct & Conflict Resolution. Students who require accommodation because a disability prevents them from fulfilling safety measures related to infectious disease will be asked to follow the steps in the "Accommodation for Disabilities" statement on this syllabus.

For those who feel ill and think you might have COVID-19 or if you have tested positive for COVID-19, please stay home and follow the further guidance of the Public Health Office. For those who have been in close contact with someone who has COVID-19 but do not have any symptoms and have not tested positive for COVID-19, you do not need to stay home.

Accommodation for Disabilities, Temporary Medical Conditions, and Medical Isolation

Disability Services determines accommodations based on documented disabilities in the academic environment. If you qualify for accommodations because of a disability, submit your accommodation

letter from Disability Services to your faculty member in a timely manner so your needs can be addressed. Contact Disability Services at 303-492-8671 or dsinfo@colorado.edu for further assistance.

If you have a temporary medical condition or required medical isolation for which you require accommodation, please notify your group of the missed in-person attendance and offer ways to make up the expected work. You do not need to state the nature of the absence. See above, attendance is not required but participation is required. Also see Temporary Medical Conditions on the Disability Services website.

Preferred Student Names and Pronouns

CU Boulder recognizes that students' legal information doesn't always align with how they identify. Students may update their preferred names and pronouns via the student portal; those preferred 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 be assigned resolution outcomes from the Student Conduct & Conflict Resolution as well as be subject to academic sanctions from the faculty member. Visit Honor Code for more information on the academic integrity policy.

Sexual Misconduct, Discrimination, Harassment and/or Related Retaliation

CU Boulder is committed to fostering an inclusive and welcoming learning, working, and living environment. University policy prohibits protected-class discrimination and harassment, sexual misconduct (harassment, exploitation, and assault), intimate partner violence (dating or domestic violence), stalking, and related retaliation by or against members of our community on- and off-campus. These behaviors harm individuals and our community. The Office of Institutional Equity and Compliance (OIEC) addresses these concerns, and individuals who believe they have been subjected to misconduct can contact OIEC at 303-492-2127 or email cureport@colorado.edu. Information about university policies, reporting options, and support resources can be found on the OIEC website.

Please know that faculty and graduate instructors have a responsibility to inform OIEC when they are made aware of incidents related to these policies regardless of when or where something occurred. This is to ensure that individuals impacted receive an outreach from OIEC about their options for addressing a concern and the support resources available. To learn more about reporting and support resources for a variety of issues, visit Don't Ignore It.

Religious Accommodations

Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. In this class, deadlines have been created around University and National holidays, group and individual assignment deadlines are known well in advance, if a particular deadline conflicts with a religious observance the individual and/or group is encouraged to complete the assignment in advance.

See the campus policy regarding religious observances for full details.

Mental Health and Wellness

The University of Colorado Boulder is committed to the well-being of all students. If you are struggling with personal stressors, mental health or substance use concerns that are impacting academic or daily life, please contact Counseling and Psychiatric Services (CAPS) located in C4C or call (303) 492-2277, 24/7.

Free and unlimited telehealth is also available through Academic Live Care. The Academic Live Care site also provides information about additional wellness services on campus that are available to students.