



In their full expression, aircraft dynamics possess astounding complexity, and it is a tribute to the ideas developed by aviation's pioneers that a relatively simple understanding can often be obtained, leading to clear insights and design principles. While these concepts are not inherently difficult, they do lie outside most common experience, and they depend on new nomenclature and strange notation that can seem overwhelming at first. It is only through diligent and careful use of this new language that the underlying simplicity can be grasped and conveyed on exams; mastery

**How dynamical behavior is understood and specified**

- < Linearization
- < Decoupling
- < Stability derivatives
- < Modal solutions
- < Stability characterizations
- < Modal specifications

**How feedback control is designed to meet behavioral objectives**

- < Sensor selection, control structure
- < Effects on mode eigenvalues

Material and concepts are introduced, and student mastery is evaluated using several mechanisms throughout the course:

**Reading** – The textbook provides the essential basis for the course, including the concepts, terminology, notation, methods, and examples used to convey the course topics. Specific reading assignments will be given covering key sections of the book; some book sections are not covered in the course. Some supplementary material will also be provided. The textbook contains a wealth of information, but the concepts and notation are new to most: some sections need to be read more than once to fully grasp the material.

**Lectures** – These are intended to emphasize key ideas and methods that make the material easier to grasp. They are therefore a counterpart to the reading, not a replacement. The value of lectures

Proper presentation of engineering work is important throughout the ASEN curriculum, as in professional life thereafter, and students are expected to properly describe what was done and explain results using graphical and written descriptions based on the precise terminology and notation introduced in the course.

A secondary objective of the Assignments is the development of proficiency with numerical simulation, and to develop good programming habits. Simulation is becoming an indispensable tool in engineering, and proficiency is expected of professionals in this field.

**Exams** – These are the primary means of evaluation of your individual grasp of the course material. Three in-class written exams will be conducted at approximately five-week intervals. Exams will include both conceptual questions and quantitative problems. Precise use of terminology and notation is stressed. The final exam is comprehensive in that it will contain material from the entire course, but emphasis will be placed on the final third of the course material.

1. Office hours for Instructors and TAs will be held nominally during the arranged “lab” times for the course, in the Co-Pilot Laboratory (AERO N100). This is intended to provide ease-of-access to instructor and TA help, primarily during group work on the weekly assignments, but any questions about course material are welcome. To help avoid congestion, students assigned to a lab section have priority for that section. However, instructors and TAs are available to all students during these “lab” times. This mode of “supervised learning” can be quite efficient, particularly if groups are prepared by attempting the assignments ahead of time, and come to the “lab” sessions with questions. The assignments are handed out the week before the intended “lab” time in order to enable this “first-pass” in advance. Additional office hours with instructors and TAs can also be scheduled. Private meetings with instructors or TAs can also be arranged if needed.
2. Attendance at all lectures and



assignment grades are only incorporated into the final grade when the individual grade is a C or better. **In other words, if your individual average is below a C, the group-based grade fraction will not be averaged into your final grade, which will then be based solely on your exam/quiz scores and notebook grade.** This policy makes it important to use the group assignments to enhance *your own* learning. Although it may seem more efficient to split up the assignment among group members, this is dangerous because the learning is also split up, and this often results in poor performance on exams, and significant risk of repeating the course. Recommended practice is to work the assignments first on your own, then use the group interactions and instructor/TA help to answer questions and refine and deepen your understanding.

Grades for the course are set based on the following criteria:

- A, A- Demonstrates mastery of the course material in both conceptual and quantitative aspects.
- B+, B Demonstrates comprehensive understanding of the material, with a solid conceptual grasp of key concepts and strong quantitative work.
- B-, C+ Demonstrates good understanding of most key concepts, with few major quantitative errors.
- C Demonstrates adequate understanding of the material to proceed to the next level; sufficient quantitative work.
- C- Does not demonstrate adequate understanding of the material to proceed to the next level, or makes persistent quantitative errors.
- D Very little understanding is evident, consistently poor quantitative work.
- F Unsatisfactory performance.

Final letter grades are based on the numerical grades earned during the semester, roughly corresponding to the standard University grading scale. Students are cautioned that numerical grades near the critical 73% level (a nominal C) may or may not result in a C for the course.

It is recognized that all students do not have the same objectives in terms of course grades, but the risk of repeating the course and delaying graduation is great if the individual score is close to 73% going into the final exam. It is strongly recommended to avoid this situation by making use of all assistance available (e.g. group assignment participation, lecture participation, instructor/TA help) to prepare for the exams.

### Grade Breakdown

Your final grade is a combination of an individual work (IW) and group work (GW) score.

Type	Description	Percentage
Individual Work (IW)	Midterm Exams (2)	50% (25% each)
	Final Exam	30%
	Quizzes	10%
	Notebook	10%
IW Score	Total Individual Score	100%

Group Work (GW)	Weekly Assignments	100%
GW Score	Total Group Score	100%

### Final Course Score

Your final course score is computed as follows

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and the second week is designed for group finalization of the Assignment solutions and for instructor/TA help during “lab” times.

## Quiz Schedule

Quizzes will be conducted on-line through Canvas. They will be open each week from Friday until 11:59 PM on Sunday. Only one attempt of each question is allowed, and Quiz answers will not be accepted after the deadline. Solutions will be posted after the deadline.

All students enrolled in a University of Colorado Boulder course are responsible for knowing and adhering to [the academic integrity policy](#) of the institution. Violations of the policy may include: plagiarism, cheating, fabrication, lying, bribery, threat, unauthorized access, clicker fraud, resubmission, and aiding academic dishonesty. All incidents of academic misconduct will be reported to the Honor Code Council ([honor@colorado.edu](mailto:honor@colorado.edu); 303-735-2273). Students who are found responsible of violating the academic integrity policy will be subject to nonacademic sanctions from the Honor Code Council as well as academic sanctions from the faculty member. Additional information regarding the academic integrity policy can be found at <http://honorcode.colorado.edu>.

### Accommodation for Disabilities

If you qualify for accommodations because of a disability, please submit to your professor a letter from Disability Services in a timely manner (for exam accommodations provide your letter at least one week prior to the exam) so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities. Contact Disability Services at 303-492-8671 or by e-mail at [dsinfo@colorado.edu](mailto:dsinfo@colorado.edu). If you have a temporary medical condition or injury, see [Temporary Injuries guidelines](#) under the Quick Links at the [Disability Services website](#) and discuss your needs with your professor.

### Religious Holidays

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, you must let the instructors know of any such conflicts within the first two weeks of the semester so that we can work with you to make reasonable arrangements. See [campus policy regarding religious observances](#) for full details.

### Class Behavior

Students and faculty each have responsibility for maintaining an appropriate learning environment, not only while in class but also while working outside of class. Those who fail 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 differences of race, color, culture, religion, creed, politics, veteran's status, sexual orientation, gender, gender identity and gender expression, age, disability, and nationalities. Class rosters are provided to the instructor with the student's legal name. We will gladly honor your request to address you by an alternate name or gender pronoun. Please advise us of this preference early in the semester so that we may make appropriate changes to our records. For more information, see the [policies on classroom behavior](#) and [the student code](#).

**Discrimination and Harassment**

The University of Colorado Boulder (CU-Boulder) is committed to maintaining a positive learning, working, and living environment. CU-Boulder will not tolerate acts of sexual misconduct, discrimination, harassment or related retaliation against or by any employee or student. CU's Sexual Misconduct Policy prohibits sexual assault, sexual exploitation, sexual harassment, intimate partner abuse (dating or domestic violence), stalk