

**ASEN 3128  
Aircraft Dynamics**

**Syllabus**

Lecture:      Zoom/Canvas      T, Th      1:15 – 2:30 pm

As of 12/31/2011, the following information is available for the period ending 12/31/2011:

- Control effects
- Steady flight conditions, trim states

**How aircraft dynamics models are simulated**

State space models  
Matlab integration  
Good naming and commenting habits

**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

**Lecture** – Lectures will be remote and online throughout the semester, with no option for in-person lectures. Lectures will be delivered live over Zoom. They will be recorded and uploaded to the course Canvas page. Lectures will be recorded in two formats – Zoom recordings will be posted in short blocks (e.g. 4 separate files per lecture) and the CU Course Capture system will also record and post the lectures to the Canvas site.

**Lab Sections** – Students are expected to register for one of the two lab sections and be available for in-person or remote interaction during the scheduled lab section. Lab groups will be made from students in the lab sections without considering if they plan to attend in-person or remotely. Lab sections are the only opportunity for in-person interaction during the semester. However, students are not required to attend lab sections in-person and can complete all lab assignments remotely.

**Online** – The course is designed for remote (live, synchronous) interaction for the lectures and the lab sections. However, the course can be completed if a student must take the course online (asynchronously). Students who plan to complete the course online must contact the instructor within the first week of the course so a plan can be created for participating in lab assignments and for taking exams.

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 is dependent on your participation in them. Passive “watching” will provide little benefit. Active note taking is critical to developing first-hand familiarity with the notation, terminology, and methods, and to gaining comfort in using them. Although lectures will be recorded, this is a poor substitute for your own lecture notes. Questions are encouraged during lectures, and will be prompted often.

**Homework** – Homework problems are assigned every other week, out of sync with the lab assignments. They provide practice in solving problems of varying difficulty and sometimes will also involve computing. Collaboration on homework is allowed (copying is not); however, students are encouraged to use homework as a means to ensure their individual mastery of the subject. In-class group problem solving and labs will allow for considerable collaborative problem solving.

**Reading Quizzes** – These will cover the reading material, lectures, and portions of the lab assignments. Quiz grades will contribute to your individual course grade and are designed to encourage you to come to class and lab prepared. They will consist of true-false and multiple-choice-

Sunday 2 May, 4:30 – 7:00 pm. Exams will include both conceptual questions and quantitative problems. Precise use of terminology and









information regarding the Honor Code academic integrity policy can be found at the [Honor Code Office website](#).

As a matter of public health and safety due to the pandemic, all members of the CU Boulder community and all visitors to campus must follow university, department and building requirements, and public health orders in place to reduce the risk of spreading infectious disease. Required safety measures at CU Boulder relevant to the classroom setting include:

- maintain 6-foot distancing when possible,
- wear a face covering in public indoor spaces and outdoors while on campus consistent with state and county health orders,
- clean local work area,
- practice hand hygiene,
- follow public health orders, and
- if sick and you live off campus, do not come onto campus (unless instructed by a CU Healthcare professional), or if you live on-campus, please alert [CU Boulder Medical Services](#).

Students who fail to adhere to these requirements will be asked to leave class, and students who do not leave class when asked or who refuse to comply with these requirements will be referred to [Student Conduct and Conflict Resolution](#). For more information, see the policies on [COVID-19 Health and Safety](#) and [classroom behavior](#) and the [Student Code of Conduct](#). If you require accommodation because a disability prevents you from fulfilling these safety measures, please see the “Accommodation for Disabilities” statement on this syllabus.

All students who are new to campus must complete the [COVID-19 Student Health and Expectations Course](#). Before coming to campus each day, all students are required to complete the [Buff Pass](#). *In this class, you may be reminded of the responsibility to complete the Buff Pass and given time during class to complete it.*

Students who have tested positive for COVID-19, have symptoms of COVID-19, or have had close contact with someone who has tested positive for or had symptoms of COVID-19 must stay home. In this class, if you are sick or quarantined, and complete the [Health Questionnaire and Illness Reporting Form](#) remotely. In this class, if you are sick or quarantined, email the instructor if you are unable to participate in class activities remotely or online. Because of FERPA student privacy laws, students are not required to state the nature of their illness when alerting the instructor that they cannot participate.

### **Classroom Behavior**

Both students and faculty are responsible for maintaining an appropriate learning environment in all instructional settings, whether in person, remote or online. 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 race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender



Week					
No.	Dates		Tuesday	Thursday	Friday
1	1/14-1/15	<b>Equations of Motion; Intro to Aircraft Dynamics and Control:</b>			