ASEN 2012 – Fall 2018

Experimental and Computational Methods in Aerospace Engineering Sciences

Instructors:

Section 001
Dr. Allison Anderson
ECAE 115
303 492 8511
apanders@colorado.edu
Lecture: 8-8:50 M, W, Math 100
Office Hours: M 9-10 am, Th 3:30 – 4:30 pm

Section 002
Dr. Torin Clark
ECAE 100
303 492 4015
torin.clark@colorado.edu
Lecture: 2-2:50 M,W, Fleming 155
Office Hours: M 3-4 pm, F 9-10 am

Teaching Assistant:
John Jackson
John.M.Jackson@Colorado.EDU
Office Hours: T 2-3 pm

Course Assistants:
Melinda Zavala
Melinda.Zavala@Colorado.EDU
Office Hours: M 1-2 pm

Justin Fay
Justin.Fay@Colorado.EDU
Office Hours: Th 1-2 pm

Class Web Site: canvas.colorado.edu

Texts:

Required
Taylor, John R. "An Introduction to Error Analysis: The Study of Uncertainties in Physical Measurements", 1996, 2nd edition, University Science Books, ISBN-13: 978-0935702750

Recommended
Pratap, Rudra: "Getting Started with MATLAB: A Quick Introduction for Scientists and Engineers", 2010,Oxford University Press, ISBN-13: 978-0199731244

Prerequisites:
GEEN 1300 or equivalent

Corequisites:
ASEN 2001 and ASEN 2002

Course Objectives: Enable students to understand and apply the computational methods needed to model, solve, and analyze data from problems in aerospace engineering sciences.

Major Course Topics:

1. Structured MATLAB Programming to Solve Aerospace Engineering Problems.
2. Uncertainty and Error Analysis.
3. Technical Writing and Data Presentation
4. Advanced Computational Methods
5. Ethics in Engineering

Grading Guidelines:

Projects (2 projects)	30%
Exams (2 exams)	30%
Participation (Attendance and active participation)	20%
Quizzes (4 quizzes)	20%

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% and above 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.

Important Notes

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 web. 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. Reading assignments and viewing the posted lectures are to be completed *before* the course period. Many of our lectures are flipped, so coming prepared to work on problems and to ask questions is critical. Your active participation is key to the success of the class, and thus will factor into your overall course grade.
3. We reserve the right to reply to email questions only in business hours, i.e. Monday through Friday, 8:00 am – 5:00 pm.
4. Attendance to all classes is expected. *There are no make-ups exams or quizzes except in cases of acceptable excuses.* Acceptable excuses, such as medical certification of an emergency, are required to make up any quiz. Any other medical or studies-related needs of absence have to be *communicated and approved ahead* of the date of occurrence.
5. We will use Canvas and ASEN 2012 mailing list to send out announcements, to provide comments to you on class activities, and to provide general information about course assignments.

Evaluated Outcomes

This is one of the first courses in the ASEN curriculum where you will begin to acquire the following skills and abilities, which are the expected outcomes from our program at graduation:

O1	Professional context and expectations (ethics, economics, etc.)
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
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.

Additional Guidelines

Programming Language: 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. You also have access to the ITLL Lab Plaza computers during periods for which no other class is using them. There are also a number of computers in the student group study rooms and in the College.

Exam Schedule: In this class, we will **not** have a comprehensive exam during finals week. We will have two exams during the semester that are not comprehensive in nature, but will assess your understanding of the class material. These exams will be unified evening exams, incorporating both sections. Please ensure you do not have any evening conflicts on the dates listed in the course schedule.

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 addressed. Disability Services determines accommodations based on documented disabilities in the academic environment. Information on requesting accommodations is located on the Disability Services website (www.colorado.edu/disabilityservices/students). Contact Disability Services at 303-492-8671 or dsinfo@colorado.edu for further assistance. If you have a temporary medical condition or injury, see Temporary Medical Conditions under the Students tab on the Disability Services website and discuss your needs with your section's instructor.

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, if you need accommodations for an observance, please let me know at least 2 weeks prior to the date and I will work with you to come up with a reasonable solution. See the campus policy regarding religious observances for full details.

Classroom Behavior: Students and faculty each have responsibility for maintaining an appropriate learning environment. 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 expression, veteran status, political affiliation or political philosophy. Class rosters are provided to me with your legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records. For more information, see the policies on classroom behavior and the Student Code of Conduct.

Sexual Misconduct, Discrimination, Harassment and/or Related Retaliation: 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), stalking or related retaliation. CU Boulder's Discrimination and Harassment Policy prohibits discrimination, harassment or related retaliation based on race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation or political philosophy. Individuals who believe they have been subject to misconduct under either policy should contact the Office of Institutional Equity and Compliance (OIEC) at 303-492-2127. Information about the OIEC, the above referenced policies, and the campus resources available to assist individuals regarding sexual misconduct, discrimination, harassment or related retaliation can be found at the OIEC website.

Honor Code: All students enrolled in a University of Colorado Boulder course are responsible for knowing and adhering to the academic integrity policy. Violations of the policy may include: plagiarism, cheating, fabrication, lying, bribery, threat, unauthorized access to academic materials, clicker fraud, resubmission, and aiding academic dishonesty. All incidents of academic misconduct will be reported to the Honor Code Council (honor@colorado.edu; 303-735-2273). Students who are found responsible for 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 the Honor Code Office website.