ASEN 2012 – Fall 2019

Experimental and Computational Methods in Aerospace Engineering Sciences

Section 001: 8:50-10:30, Aero 120

Section 002: 10:40-12:20, Aero 120

Instructor:
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Teaching Assistant:
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Office Hours: Th 4-6pm	Office Hours: W 5-6pm	Office Hours: M 4-5:30pm, W 3-4pm

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)	40%
Participation (Attendance and active participation)	30%
Quizzes (3 quizzes)	30%

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.

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 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. 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 heavily into your overall course grade.
3. Emails will be responded to during business hours, i.e. Monday through Friday, 8:00 am – 5:00 pm. Emails regarding quizzes or projects which are received 24 hours or less before the deadlines will not be responded to. Students are encouraged to attend office hours in lieu of emails as it enables clarity and learning.
4. In this class, we will not have a comprehensive exam during finals week. We will also not have traditional exams. Rather, this class will rely on short in-class quizzes to perform intermittent assessment of your performance throughout the semester. No internet enabled calculators are allowed during quizzes (i.e. no cell phones). You are not allowed to leave the classroom after the quizzes have been completed.
5. There will be no unexcused quiz makeups provided. If you miss a quiz, course instructors will evaluate each case on an individual basis based on the context and information available to make a determination if a makeup exam will be provided. Students are encouraged to provide as much documentation as possible to enable an informed decision.
6. Attendance to all non-quiz classes is also required. Students will be given one "grace" class where missed attendance will be automatically excused. This should be reserved for medical or family emergencies, since you will not be allowed to make up **any** other missed classes beyond this single event during the semester, regardless of the reason. Make-up work will not be required, but you are STRONGLY encouraged to perform the in-class activities on your own time to ensure you have prepared the material for other graded components of the class.
7. 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.

8. 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.
9. 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 PILOT computer lab during periods for which no other class is using them.

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

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. 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.

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 the instructor with the student's 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.

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; 303-492-5550). Students who are found responsible for violating the academic integrity policy will be subject to nonacademic sanctions from the Honor Code as well as academic sanctions from the faculty member. Additional information regarding the Honor Code academic integrity policy can be found at the Honor Code Office website.

Sexual Misconduct, Discrimination, Harassment and/or Related Retaliation: The University of Colorado Boulder (CU Boulder) is committed to fostering a positive and welcoming learning, working, and living environment. CU Boulder will not tolerate acts of sexual misconduct intimate partner abuse (including dating or domestic violence), stalking, protected-class discrimination or harassment by members of our community. Individuals who believe they have been subject to misconduct or retaliatory actions for reporting a concern should contact the Office of Institutional Equity and Compliance (OIEC) at 303-492-2127 or cureport@colorado.edu. Information about the OIEC, university policies, anonymous reporting, and the campus resources 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.

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, we require a minimum of 2 weeks advanced notice of these conflicts.

See the campus policy regarding religious observances for full details.