ASEN 2012 – Fall 2017

Experimental and Computational Methods in AES

Instructors:

Section 001
Allie Anderson
Office: ECAE 115
Phone: 303-492-8511
Email: allison.p.anderson@colorado.edu
Office Hours: Wednesday 9-10am, Friday 9-10am

Section 002
Jelliffe Jackson
Office: ECOT 612
Phone: 303-492-3702
Email: jelliffe.jackson@colorado.edu
Office Hours: Tuesday 1-3pm

Course Assistant:

Paige Arthur
Office: ECAE 124 (Aero Graduate Breakout Room)
Email: Paige.Arthur@Colorado.EDU
Office Hours: Monday 3-4pm, Friday 3-4pm

Christine Chamberlain
Email: Christine.M.Chamberlain@Colorado.EDU
Office Hours: Monday 3-4pm, Friday 3-4pm

Class Web Site: https://learn.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 statistical, experimental, and computational methods used in aerospace engineering sciences.

Major Course Topics:
1. Structured Matlab Programming to Solve Aerospace Engineering Problems.

2. Statistics, Uncertainty and Error Analysis.
3. Technical Writing and Data Presentation
4. Advanced Computational Methods
5. Ethics in Engineering

Grading Guidelines:

Project 1	25%
Project 2	25%
Homework	35%
Quizzes	15%

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 web.
2. We reserve the right to reply to email questions only in business hours, i.e. Monday through Friday, 8:00 am – 5:00 pm.
3. Reading assignments are to be completed *before* the lecture/discussion. The lecture/discussions should help to clarify and supplement what you have read.
4. Attendance to all scheduled lecture/discussion is expected. In addition to announced quizzes, random unit quizzes may be given during or before any lecture/discussion. Like the scheduled quizzes and exams, *there are no make-ups except in cases of acceptable excuses discussed in note 5*. We *may* normalize quiz grades at the end of the semester (not guaranteed).
5. 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.
6. Many of your assignments will require you to write or modify a computer program the runs in Matlab. Hence you are expected to keep backups of your program in multiple locations so as to guard against computer crashes.
7. We will use D2L 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.

Homework

- The goal of this course is that each of you will be proficient in the techniques taught, and thus homework must be submitted individually, unless otherwise stated by the instructor. Of course that does not mean you cannot ask your peers for assistance. A new set of eyes can sometimes see mistakes that you overlook. But you may not, for example, submit the computer program or any portion of your classmate as your work; this would be considered an honor code violation and would be treated as such.
- When written homework is assigned it should be neat and readable with adequate space and margins. *Always show your work and make it clear which is the correct answer by boxing it. Messy work will be returned and marked NOT GRADED and a zero recorded.*
- All hand-written homework should be done on the front side of engineering paper (the green or white ruled paper available at the bookstore). Staple multiple pages in the upper left corner. Please indicate clearly where each problem begins and ends. Your name should appear in the top right-hand corner of your homework.
- Please do not try to fit your homework onto a single page. Use as much as space (and as many pages) as are needed to clearly show your work.

- If you have concerns about how your homework is graded, you must first speak with the TA. If you are still concerned after talking with the TA, you can speak to instructor.
- *No late homework submissions will be accepted.*

Additional Guidelines

- In this class, we will exclusively use the programming language Matlab. You 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.
- 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 professor.
- If you have three or more final exams scheduled on the same day, you are entitled to arrange an alternative exam time for the last exam or exams scheduled on that day. To qualify for rescheduling final exam times, you must provide evidence that you have three or more exams on the same day, and arrangements must be made with your instructor no later than the end of the sixth week of the semester (October 6, 2017).
- 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 should make arrangements with the instructors at least two weeks in advance, so that appropriate accommodations can be made. See the campus policy regarding religious observances for full details.
- 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.
- 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.
- 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.

- The University of Colorado policy on Sexual Harassment and the University of Colorado policy on Amorous Relationships applies to all students, staff and faculty. Any student, staff or faculty member who believes s/he has been the subject of discrimination or harassment based upon race, color, national origin, sex, age, disability, religion, sexual orientation, or veteran status should contact the Office of Discrimination and Harassment (ODH) at 303-492-2127 or the Office of Judicial Affairs at 303-492-5550. Information about the ODH and the campus resources available to assist individuals regarding discrimination or harassment can be obtained at http://www.colorado.edu/odh and http://www.colorado.edu/policies/discrimination.html

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.