

ASEN 2001 - Fall 2019

Introduction to Statics, Structures and Materials

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Class Web Site: log on to <https://canvas.colorado.edu>

Homework Site: in Canvas!

Piazza Q&A Site: In Canvas!

MATLAB Grader site: <https://grader.mathworks.com/courses/9065-cu-boulder-asen-2001-lab-1>

Class e-mail list: This is automatically done through Canvas.

Texts: R.C. Hibbeler, *Statics and Mechanics of Materials* (5th ed.), Pearson, Online through Canvas, including Mastering Engineering site. Payment is through inclusive access- if you are enrolled in this course, the access cost will automatically be deducted after Sept 11th through you student tuition and fee bill. You may opt out of accessing the electronic textbook and homework site by using the link in a reminder email you will receive from the book store entitled 'Day 1 Digital Access.' **However, you if you opt out, you will have no way to complete homework assignments.**

Prerequisites: APPM 1360 & PHYS 1110 or equivalent; CHEM1211/CHEN1221 or CHEM1111; Co-Req with APPM 2350

Required Equipment: Safety goggles; Bound laboratory notebook (no spiral). This notebook can be shared with ASEN 2002.

Course Objectives: Introduce the fundamental analytical tools for statics and structural analysis in the context of the physics of aerospace materials. Topics include force/moment equilibrium, truss analysis, beam theory, stress and strain, stiffness and strength of material, and aerospace structural design. MATLAB programming will be required for homework and laboratory assignments.

Major Course Topics:

1. Introduction to basic concepts of structures and materials.
2. Forces, moments, equilibrium.
3. Internal loads, distributed loads.
4. Stress and strain, stress and strain transformation
5. Stiffness, strength, and failure of materials
6. Truss analysis, method of section, method of joints
7. Beam analysis, shear force and moment diagrams
8. Moments of inertia

Grading Guideline:

Group work:	Labs 2 and 3	30% (15% +15%)
	Homework*	10%
Individual:	4 Exams	50% (= 10% + 15% + 10% + 15%)
	Lab 1	10%
		<hr/>
		100%

- * Group work only counts toward final grade if total individual grade is C or better.

- **No exam grades will be dropped.**
- **Please verify all your scores and grades on Canvas within 2 weeks after they are posted; requests to change a score need to be made within this period. All grade requests come to the instructor in written form.**

Note: We reserve the right to make minor changes to this distribution of weights based on variations in assignments.

Exam Times and Locations:

1. Exam 1: 09/19, in class
2. Exam 2: 10/10, in class (Comprehensive statics)
3. Exam 3: 11/07, in class
4. Exam 4: **Saturday**, 12/14, 7:30 – 10:00 am (Comprehensive Mechanics of Materials)
(Date, time and location of exam 4 assigned by the registrar's office)

Evaluated Outcomes: The Department of Aerospace Engineering Sciences has adopted a policy of assigning grades according to evaluated outcomes (Ox) in each course. Each assignment designed and graded to assess some combination of several or a few of the following outcomes:

- O1** Professional context and expectations (ethics, economics, etc.)
- O2** Historical perspective and vision
- O3** Multidisciplinary, system perspective
- 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
- O8** Ability to work in teams
- O9** Ability to design systems
- O10** Ability to formulate and solve problems
- O11** Ability to use and program computers

Important Notes:

1. Emails will be responded to during business hours, i.e. Monday through Friday, 8:00 am – 5:00 pm. Emails regarding exams or lab reports which are received 24 hours or less before the exam or lab report deadlines will not be responded to. Students are encouraged to attend office hours in lieu of emails as it enables clarity and learning.
2. Changes may be made 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 Canvas. Changes to this syllabus and assignments-table may be announced at any time during class periods. We will post the current syllabus and assignments-table on Canvas. Both are dated in the footnote.
3. Canvas will be used to send out announcements, to provide comments to you daily on class activities, and to provide general information about course assignments.
4. Attendance to all lectures and labs is expected.
5. Why have reading assignments, homework, lab exercises, and exams?

- Reading assignments are to be completed before the lecture/discussion. The lecture/discussions should help to clarify and supplement what you have read.
- Homework assignments are to lead you through important applications of current material. Homework enforces the mental processes that help you to become proficient in a subject. Before beginning any homework assignment, you should read the text and work the examples in the text. Homework, which is graded in the category “groupwork”, may be discussed with the TAs/TFs.
- You are responsible for concepts introduced in labs on exams.
- Labs help you to learn how to synthesize the basic concepts, methods, and tools presented in the course curriculum. The team-oriented approach will give you experience in working and cooperating in groups. Group members must inform the TAs early on when one student does not cooperate. **A portion (30%) of lab 2 and 3 grades will be from anonymous peer evaluation of the team members.**
- Experiments may require note taking in the lab book.

6. Homework:

- All homework questions must be submitted to the Piazza discussion forum under the appropriate homework assignment/question. **No homework questions should be emailed to the instructional team- all questions should be asked at office hours or posted to Piazza.** The instructional team will not respond to posts that are posted after 5 PM the day before the homework is due.
- Collaboration is permitted on homework. However, we strongly recommend to first work on your own on the homework before comparing your results with your homework team members. Teams of up to three students are permitted. Groups may change during the semester. You may discuss the means and methods for formulating and solving problems and even compare answers, but you are not free to copy someone's assignment. **Copying material from any resource (including solutions manuals) and submitting it as one's own is considered plagiarism and is an Honor Code violation. Remember, the less you think about the problems yourself, the less you actually learn, and the more difficult it will be to succeed on exams.**
- You are encouraged to answer questions that other students pose to Piazza, but you may only discuss the means and methods for formulating and solving problems. You cannot compare answers on Piazza, and you may not post your exact work or computer code.
- No late assignments will be accepted without documentation of a medical or family emergency. If you must miss class for an excused absence, you may submit your homework early. There are no exceptions to this policy.
- Although each homework assignment will have several problems, all problems may not be graded. However, solutions will be provided to you for all the problems.

- All homework must be submitted through MasteringEngineering on Canvas. No hard copy submissions of the homework will be accepted.
- Homework solutions are posted shortly after the submission deadline.

7. Exams:

- All academic-excused absences for exams or labs need to be communicated and approved 2 weeks ahead of the expected absence. Documentation for excused absence will be required. **These requests must be made in email to the instructor.**
- There will be no unexcused exam makeups provided. If you miss an exam, 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
- If, under the circumstances outlined above, the instructor determines a make-up exam should be provided, the instructors reserve the right to not offer a make-up exam for midterms 1 (statics) and 3 (structures), and to instead count the grade of the student's comprehensive exam (midterm 2 for statics, the final exam for structures) in the place of the missed exam.
- Regrade requests must be submitted to the professors in writing within 2 weeks of the grade posting to Canvas. Submit the original assignment along with a typed page stating the problem number, grading issue, and what you believe the correct grade should be.

8. Labs:

- SAFETY is the number one priority for laboratory exercises. Access to PILOT depends upon your compliance with the PILOT Contract you have signed to obtain a computer logon and after-hours key code. PILOT offers a mandatory orientation at the beginning of the semester. You are required to attend the safety lecture offered at the beginning of the semester. Students must satisfy the safety requirements by submitting a lecture report on safety. This report, graded satisfactory or higher, is required before participating in the experiments.
- Lab attendance is required. Random attendance may be taken during the semester. All team members (in Labs 2 and 3) are assumed to **contribute equally** to the overall progress and completion of the lab.
- Food or drinks (even water) are not allowed on the workstations in the PILOT lab plaza.
- Many assignments will require access to a computer and basic programming skills. Computer programming skills are a prerequisite for this class, e.g. GEEN 1300 or CSCI 1300.

We **will not** teach computer programming, although we will make an effort to formulate the assignments to emphasize proper computing skills. In this class, we will exclusively use the programming language MATLAB. You have access to the PILOT Lab Plaza computers during regular class lab times or 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.

- Pre-lab videos will be provided in advance of Lab 1. Lab documents will be provided in advance of labs 2 and 3, which provide a detailed description of various steps and milestones in each lab. You are required to carefully study the pre-lab videos and lab documents before the beginning of each lab section.
- Guidelines for Lab Reports will be handed out in a few weeks as they are assigned. Each lab assignment will include guidelines that are specific to the project.
- Students are encouraged to submit lab questions to the Piazza discussion page under the appropriate lab number and check/participate in the ongoing discussions. As with the homework, you may discuss the means and methods for formulating and solving problems but you cannot compare answers on Piazza nor post your exact work or computer code.

9. Grading:

- Minor adjustments may be made in the determination of final letter grades and with grade cut lines, but there is no “curving” in this course.
- To receive a course grade of C or better (which is required to fulfill the prerequisite for ASEN2003 and other courses), students must receive a C or better in the individual coursework portion of the class. Stated differently, the students who receive an individual grade of C- or lower will not receive any group grades.

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, excused absences for exams or labs on religious holidays need to be communicated to the instructor via email 2 weeks ahead of the expected absence.

See the [campus policy regarding religious observances](#) for full details.

Final Comments

Our grading scheme is not assigned to reward or punish. It is designed to indicate your level of competency compared to the standards set by the AES faculty. Do you meet the minimum level of competency? Do you exceed the minimum? Are you below the minimum? This should be indicated by the final grade. We (the faculty) are professionals and it is our job to set and maintain standards. We are expected to use our education, experience, and interactions with industry, government laboratories, others in academe, etc., to determine the content of these standards. Because our

program is accredited by ABET (Accreditation Board for Engineering and Technology), the AES curriculum meets that board's requirements. As with any other professionals (doctors, lawyers, etc.) you must trust that we know what we are doing and that we are obliged to uphold standards.

The final grade indicates your readiness to continue to the next level of courses. Meeting the minimum requirements indicates that you are prepared to continue at least at the minimum level required for the next in the sequence of courses. Exceeding the minimum means you are ready to enter the next course and that you have mastery of material beyond the minimum, i.e., you show some level of proficiency.

ASEN 2001 is designed to take advantage of the facilities of the PILOT to enrich your learning experience. We will provide a high-quality learning experience and we will uphold the academic standards determined by the AES faculty.