ASEN 2001 - Fall 2017

Introduction to Statics, Structures and Materials

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Class Web Site: log on to https://learn.colorado.edu/ to find ASEN2001

Homework Site: log on to http://www.masteringengineering.com

Class e-mail list: This is automatically done through D2L.

Texts: R.C. Hibbeler, *Statics and Mechanics of Materials,* Pearson, 5th edition.

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

Required Equipment: Safety goggles; Bound laboratory notebook (i.e. pages are NOT removable). 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*	30%
	Homework*	10%
Individual:	4 Exams	50% (= 10% + 15% + 10% + 15%)
	Unit Quizzes	10%
		100%

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

- ***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 D2L within 2 weeks after they are posted; requests to change a score WILL NOT be entertained beyond this period.**

Exam Times and Locations:

1. Exam 1: 09/15, in class
2. Exam 2: 10/06, in class
3. Exam 3: 11/03, in class
4. Exam 4: During final exam week (date, time and location assigned by the registrar's office)

Important Notes and some Q&A:

1. We reserve the right to reply to email questions only in business hours, i.e. Monday through Friday, 8:00 am – 5:00 pm. Emails received 24 hours or less before the exams are not guaranteed to be responded.
2. 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 assignments-table may be announced at any time during class periods. We will post the current syllabus and assignments-table on the web.
3. We will use D2L and ASEN 2001 mailing list 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 laboratory workshops is expected. We may give iClicker and written quizzes during regular lectures. **These quizzes cannot be made up if missed**. We may, after final review at the end of the semester, normalize the quiz grades, but this is not guaranteed.
5. Why have reading assignments, homework, lab exercises, exams, and design projects?
    - Reading assignments are to be completed before the lecture/discussion. The lecture/discussions should help to clarify and supplement what you have **already** 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/CAs.
    - You are responsible for concepts introduced in labs since we may ask questions on lab concepts in quizzes or exams.
    - Experimental Labs and Design Labs help you to learn how to apply 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 of the total lab grade will be from anonymous peer evaluation of the team members.

- Experiments may require note taking in the lab book.

6. Homework:
   - 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. 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.**
   - Homework solutions, even those submitted and graded on Mastering Engineering, must demonstrate an understanding of the principles involved by including diagrams, using correct notation and terminology, explaining the approach, showing the key steps to obtaining the solution, and outlining the answer with proper units. These problem-solving steps are critical for developing problem formulation skills.
   - If you must miss class for an excused absence, you may submit your homework early. **Late assignments are NOT accepted**. If you know in advance that you must miss a homework due date or lab, send your instructor an e-mail to make arrangements.
   - All homeworks will include an online section and a written section. The online section must submitted through Mastering Engineering, while the written section will be due at the start of class on the due date. *Late assignments are not accepted*—that includes assignments slipped under the professors' doors after class has started. However, if you will not be attending class you may submit your homework early by slipping it under the instructors' door. If you know in advance that you must miss a homework due date or lab, send your instructor an e-mail or voice-mail to make arrangements.
   - All homework must be on 8.5´11-inch engineering paper. Do not submit assignments on spiral notebook paper with ripped edges. Multiple pages must be stapled in the upper-left comer, no paperclips or dog-ears. Your name (last, first), assignment number, and due date should be visible on the outside in the upper portion of **each page**. Written work must be neat and readable with adequate spacing and margins. You are responsible for legibility—no reevaluation will be granted. Very messy work will be returned to you ungraded and a score of zero recorded. Final answers must be indicated with an arrow, underline, or box. Multiple answers (when only one is required) will be counted incorrect. *Always submit work with a professional appearance. Neatness, clarity, and completeness count.*
   - Homework solutions will be posted after lecture.

7. Acceptable excuses, such as medical certification of an emergency, are required to make up any exam. However, **there is NO opportunity to make up unit quizzes**. Any other medical or academic-related absences need to be communicated and approved ahead of the expected absence. **These requests must**

be made in email to the instructor. Make up exams have to be taken within 2 day of returning to class.

8. SAFETY is the number one priority for laboratory exercises. Access to ITLL depends upon your compliance with the ITLL Contract you have signed to obtain a computer logon and after-hours key code. ITLL 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.
9. Food or drinks (even water) are not allowed on the workstations in the ITLL lab plaza.
10. 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 ITLL 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.
11. Guidelines for Design Reports and 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.
12. This class is not graded on a curve; there are absolute expectations of performance. A performance of 90% will earn an A, 80% earns a B, etc. However, we reserve the right to normalize the class grades based on the expected minimum level of competency. **Furthermore, 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**.
13. 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.
14. 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).
15. 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.

16. 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.

17. 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.

18. 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 non-academic 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.

19. 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

Final Comments

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

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 academia, 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 ITLL 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.