ASEN 2401 – Fall 2025

Statics

Instructor:

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Teaching Assistants:

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Class Website: log on to https://canvas.colorado.edu

Graded Exams Uploaded to: Gradescope, https://gradescope.com

Regrade requests: To be submitted to Canvas

Texts: R.C. Hibbeler, *Engineering Mechanics: Statics (15th)*, Pearson. Electronic textbook ISBN: 9780137569830

Prerequisites: APPM 1360 or MATH 2300 & PHYS 1110 or equivalent

Course Objectives: This course is associated with forces acting on rigid bodies at rest. Significant time shall be spent determining resultant forces, setting up equivalent force systems, and computing reactions via the equations of equilibrium. Students shall develop critical thinking skills necessary to formulate appropriate approaches to problem solutions.

Major Course Topics

1. Vectors and vector operations (dot product, cross product)
2. 2D and 3D equilibrium
3. Internal forces, shear and bending moment diagrams
4. Analysis of structures – trusses, frames and machines
5. Centroids and moments of inertia
6. Friction

Course Learning Objectives

After completing this course, students should have:

1. An ability to use vector mechanics for the computation of forces and moments.
2. An ability to represent physical systems as free body diagrams.
3. An ability to formulate static equations of equilibrium for particles and rigid bodies including trusses, frames and machines.
4. An ability to determine internal forces in rigid bodies.
5. An ability to apply Coulomb's laws of dry friction to engineering problems.
6. An ability to compute geometric sectional properties of common composite shapes (I - beam, T-beam, channel) which include centroids of area and area moments of inertia.

Course Grading

Exam 1	22.5%
Exam 2	22.5%
Comprehensive final exam	37.5%
Homework	10%
In-class activities	7.5%
	100%

- Students must verify all scores and grades on Canvas within 1 week after they are posted; requests to change a score need to be made within this period.

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

Course Delivery

The course will be in person unless campus instructional guidelines change.

Exam Policies

Students will take two exams during the semester at the regular class time, and location (AERO 120). The exams may consist of work out (free response) problems, and/or conceptual questions (T/F, multiple choice, short answer).

Tentative exam dates are as follows:

- Exam 1 Tuesday, September 30th
- Exam 2 Tuesday, November 4th

Final Exam

The final exam is comprehensive. As we near the end of the semester, more details on specific exam topics shall be given.

The final exam will take place during the university-scheduled final exam time, which is Wednesday, December 10th from 1:30 to 4:00 pm, in AERO 120. **Please mark this date on your calendars and plan your winter travel accordingly.** If there are any changes to the final exam time, date, or location, updates shall be made as early as possible and posted to Canvas.

Lecture

Lecture will be in person in AERO 120

Office Hours

Students can ask questions about concepts, example problems, and homework assignments during office hours. The office hour schedule will be posted to Canvas within a week of the course starting. Students are strongly encouraged to attend office hours if they have questions about the lecture material or homework.

Evaluated Outcomes

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

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. an ability to communicate effectively with a range of audiences.
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative environment, establish goals, plan tasks, and meet objectives.

6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Important Notes

- Students should expect to receive accommodations for a timed assessment (e.g., exam) only if their faculty instructor(s) receive the student's accommodations letter at least 5 business days before the assessment, as a departmental policy, in order to facilitate administering the assessment.
- You should email your professor to schedule personal meetings. For example, if you experience a medical/family emergency, or you are struggling in the course and need to discuss success strategies.
- Please note in case of a medical/family emergency, you should contact the office of Student Support and Case Management here: https://www.colorado.edu/studentaffairs/sscm They will help you coordinate across ALL of your courses and can put you in touch with a number of campus resources.
- We reserve the right to make changes to the weekly course schedule and/or assignments (e.g., homework) based on events that require different dispositions. We will give sufficient advance notice through announcements in class and via Canvas.
- Please check the Canvas site regularly as important announcements related to assignments, inclement weather, etc. are posted on this website.
- Homework
    - Homework assignments are to lead you through important applications of current material. Like learning a musical instrument or sport, you cannot become proficient in statics/mechanics by watching the instructor solve problems - you must practice on your own. Homework enforces the mental processes that help you to become proficient in a subject. Before beginning any homework assignment, you should review the book, lectures, and lecture examples.
    - All homework assignments must be submitted through Gradescope. No hard copy submissions of the homework will be accepted.
    - The lowest homework score will be dropped.
- In-class activities
    - These activities are **unannounced** and are intended to provide students with an opportunity to work on problems in a group setting.
    - To receive credit, students must attend the lecture. There are no makeups offered for these activities.
    - These activities are graded mainly on completion in lieu of accuracy. Provided that you show up to class and are actively participating, full credit shall be awarded.
    - The lowest in-class activity shall score be dropped.
- Exams
    - Exams typically consist of conceptual questions (T/F, multiple choice, short answer) and free response problems with a time limit of ~70 minutes.
    - Usually about 1 week before an exam, a detailed announcement is posted to Canvas.

- Exams shall be administered at the usual class meeting time in AERO 120.
- An equation sheet shall be posted to Canvas and included as part of the exam package.
- Permitted resources: calculator (bring your own, they are not provided), pens, pencils, erasers, ruler, or straight edge. Tablets, cell phones, and laptops are not permitted.
- At the instructor's discretion, makeup exams may be given when an emergency or unavoidable conflict causes a student to miss the assessment.
    - Please be sure that your travel plans (e.g., Winter Break) do not conflict with the Final Exam.
    - All makeup exams must be completed within 1-2 business days from the original exam date.
- **IF** the Final Exam grade is greater than the lowest score associated with Exam 1 or 2, the final exam grade shall be averaged with the lowest (Exam 1 or 2) score.
    - Example: Exam 1 = 90%, Exam 2 = 66%, Final Exam = 80%;
    - The Final Exam grade shall be averaged with the Exam 2 grade, or the new Exam 2 grade is: (80% + 66%)/2 = **73%**.
- Following an exam, a regrade request (optional assignment) will be made available on Canvas. Submit a single pdf document to the 'regrade request' assignment on Canvas with the exam problem with your original work, your hand-written CORRECT solution to the problem in question, and a page stating the problem number, grading issue, and what you believe the correct grade should be.
- If you qualify for accommodations because of a disability, please submit your accommodation letter from Disability Services to your faculty member 2 weeks prior to the exams so that your needs can be addressed. If we have your paperwork already and you have received an email with accommodations instructions, there is no need to email us. We will receive the notifications automatically. If you are waiting for the paperwork and it is delayed for some reason, please let us know via email.

- 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.

Letter Grade	Percent Score
A	93.00-100
A-	90.00-92.99
B+	87.00-89.99
B	83.00-86.99
B-	80.00-82.99
C+	77.00-79.99
C	73.00-76.99
C-	70.00-72.99
D	60.00-69.99
F	Below 60.00

Classroom Behavior

Students and faculty are responsible for maintaining an appropriate learning environment in all instructional settings, whether in person, remote, or online. Failure 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, marital status, political affiliation, or political philosophy.

For more information, see the classroom behavior policy, the Student Code of Conduct, and the Office of Institutional Equity and Compliance.

Accommodation for Disabilities, Temporary Medical Conditions, and Medical Isolation

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, see Temporary Medical Conditions on the Disability Services website.

If you have a temporary illness, injury or required medical isolation for which you require adjustment, please contact the instructional team.

Preferred Student Names and Pronouns

CU Boulder recognizes that students' legal information doesn't always align with how they identify. Students may update their preferred names and pronouns via the student portal; those preferred names and pronouns are listed on instructors' class rosters. In the absence of such updates, the name that appears on the class roster is the student's legal name.

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 Honor Code may include but are not limited to: plagiarism (including use of paper writing services or technology [such as essay bots]), 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. Understanding the course's syllabus is a vital part in adhering to the Honor Code.

All incidents of academic misconduct will be reported to Student Conduct & Conflict Resolution: StudentConduct@colorado.edu. Students found responsible for violating the Honor Code will be assigned resolution outcomes from the Student Conduct & Conflict Resolution as well as be subject to

academic sanctions from the faculty member. Visit Honor Code for more information on the academic integrity policy.

Sexual Misconduct, Discrimination, Harassment and/or Related Retaliation

CU Boulder is committed to fostering an inclusive and welcoming learning, working, and living environment. University policy prohibits protected-class discrimination and harassment, sexual misconduct (harassment, exploitation, and assault), intimate partner abuse (dating or domestic violence), stalking, and related retaliation by or against members of our community on- and off-campus. The Office of Institutional Equity and Compliance (OIEC) addresses these concerns, and individuals who have been subjected to misconduct can contact OIEC at 303-492-2127 or email cureport@colorado.edu. Information about university policies, reporting options, and support resources including confidential services can be found on the OIEC website.

Please know that faculty and graduate instructors must inform OIEC when they are made aware of incidents related to these policies regardless of when or where something occurred. This is to ensure that individuals impacted receive outreach from OIEC about resolution options and support resources. To learn more about reporting and support for a variety of concerns, visit the Don't Ignore It page.

Religious Accommodations

Campus policy requires faculty to provide reasonable accommodations for students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. Please communicate the need for a religious accommodation in a timely manner.

See the campus policy regarding religious observances for full details.

The University of Colorado Boulder is committed to the well-being of all students. If you are struggling with personal stressors, mental health or substance use concerns that are impacting academic or daily life, please contact Counseling and Psychiatric Services (CAPS) located in C4C or call (303) 492-2277, 24/7.

Free and unlimited telehealth is also available through Academic Live Care. The Academic Live Care site also provides information about additional wellness services on campus that are available to students.