ASEN 2401 – Fall 2025

Section 001

Statics

Instructor:

Prof. Sanghamitra Neogi
Office: AERO 357
E-mail: sanghamitra.neogi@colorado.edu

Teaching Assistants:

Name	Email address

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

Homework Site: Mastering Engineering, linked through Canvas

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

Regrade Requests: To be submitted to Canvas

Class Email List: Automatically done through Canvas.

Texts: R.C. Hibbeler, *Engineering Mechanics: Statics (15th Edition),* Pearson, including Mastering Engineering site.

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

Course Objectives: This course introduces the principles of static equilibrium for rigid bodies, with applications to trusses, frames, and structural systems used in aerospace engineering, such as those in aircraft, satellites, and launch vehicles. Students will learn to analyze forces, determine resultants, simplify force systems, and calculate reactions using equilibrium equations. This course fosters critical thinking and helps students develop systematic strategies for solving engineering problems.

Major Course Topics

1. Vectors and vector operations (dot product, cross product)
2. 2D and 3D equilibrium
3. Analysis of structures – trusses, frames and machines

4. Internal forces, shear and bending moment diagrams
5. Friction
6. Centroids and moments of inertia

Course Delivery

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

Lectures

Lectures will be in person in AERO 120, Tuesdays and Thursdays from 1:00-2:15 pm.

Course Grading

Homework	10%
In-Class Activities	8%
3 Midterm Exams (**highest 2 grades are counted**)	50%
Comprehensive Final Exam	32%
	100%

- Students must verify all scores and grades on Canvas **within 1 week** after they are posted; requests to change a score must be made within this period. All regrade requests must be submitted to Canvas folder as outlined in 'Important Notes' below.

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

Exam Policies

Students will take 3 Midterm Exams during the semester at the regular class times. The exams may consist of work-out or computational problems, and/or conceptual questions (T/F, multiple choice, short answer). The final exam is comprehensive and will include questions from all topics covered throughout the semester.

Tentative exam dates are as follows

- Exam 1: Tuesday, September 16, 2025 (9/16/2025)
- Exam 2: Thursday, October 16, 2025 (10/16/2025)
- Exam 3: Thursday, November 13, 2025 (11/13/2025)

Final Exam

The final exam is comprehensive and will take place during the university-scheduled final exam time, which is Tuesday, December 9, 7:30–10 a.m. Please mark this date on your calendars and plan your winter travels accordingly.

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 to discuss questions about the course material. Students can ask questions about concepts, example problems, and homework assignments during office hours.

Evaluated Outcomes

The Ann and H.J. Smead Department of Aerospace Engineering Sciences has adopted a policy of assigning grades according to evaluated outcomes in each course. Each assignment 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

- 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. Emails will be responded to during business hours, i.e., Monday through Friday, 9:00 am – 5:00 pm. Please include "ASEN 2401" in the subject line of your emails. With respect to questions about the lecture material, homework problems, etc. students are encouraged to attend office hours instead of sending emails, since questions about concepts and problem-solving are easier to explain in person and often require diagrams, equations, or worked examples that cannot be conveyed well over email.
- 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, this syllabus 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.
- Canvas will be used to send out announcements, provide comments on class activities and general information about course assignments.
- Homework
    - Homework assignments are designed to guide you through key applications of lecture material. Just like training in the gym, practicing a musical instrument, or learning a sport, you cannot become proficient in statics by only watching the instructor solve problems—you must practice on your own. By practicing homework assignments, you will strengthen the thinking skills that lead to mastery of the subject, while fostering critical thinking and developing systematic strategies for solving engineering problems. Before starting your homework, make sure to review the textbook, lecture notes, and example problems.
    - All homework assignments must be submitted through Mastering Engineering on Canvas. No hard copy submissions of the homework will be accepted.
    - Late homework assignments will not be accepted, so please plan accordingly. You will have at least 1 week to complete each homework assignment.
    - Homework is due on Wednesdays (see the course schedule on Canvas) at 6 pm.
    - At the end of the semester your lowest homework grade will be dropped.
    - Our preference is to avoid emailing the instructional team with questions about the homework and instead attend office hours in-person as it is much easier to explain a concept or comment on your analysis.
    - Collaboration is permitted on homework. However, we strongly recommend that you first work on your own on the homework before comparing your results with your fellow classmates. 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 the graded assessments.
    - Homework solutions are posted shortly after the submission deadline.
- In-Class Activities
    - These activities are **unannounced** and are intended to provide students with an opportunity to work on problems in a group setting with real-time guidance from the instructional team.
    - Normally these activities consist of conceptual questions or work-out problems with hints. Students are given approximately 10-15 minutes to work on the problem in a team setting and the instructor will review the solution, usually at the end of the activity.

- A small portion of each activity will be graded for credit to check understanding, while the remainder will count through participation. Most of the grading is based on completion rather than accuracy, and as long as you attend class and actively participate, you will receive almost full credit. Further details will be provided in lecture.
- To receive credit, students must be attending the lecture. Makeups are not available for these activities.
- The lowest in-class activity score will be dropped.

- Exams
  - Three midterm exams will be given during the semester, and the lowest exam score will be dropped. For example, if a student earns scores of 90% on Exam 1, 77% on Exam 2, and 81% on Exam 3, the grades of 90% and 81% will be used to compute the overall course grade. This built-in flexibility accounts for situations where a student may not perform well on an exam or may miss one due to illness or unavoidable conflicts. Makeup exams are not offered in this class. The final exam will take place during the official university-scheduled exam period: Tuesday, December 9, 7:30–10:00 a.m. Please mark this date on your calendar and plan your travel (e.g., Winter Break) accordingly, as the exam must be taken at the scheduled time.
  - An equation sheet will be posted to Canvas and included with the exam materials for your use during the exams.
  - You may bring a calculator (not provided), pens, pencils, erasers, and a ruler or straight edge. Tablets, cell phones, and laptops are not permitted.
  - Following each exam, an optional "regrade request" assignment will be available on Canvas. If you believe a grading error was made, you must submit your request to this optional assignment within one week of the grade posting. Upload a single PDF document that includes: (1) the exam problem with your original work, (2) your hand-written CORRECT solution to the problem, and (3) a brief explanation stating the problem number, the grading issue, and what you believe the correct grade should be.
  - Students should expect to receive accommodations for a timed assessment (e.g., exam) only if their faculty instructor(s) receives the student's accommodation letter at least 5 business days before the assessment, as a departmental policy, in order to facilitate administering the assessment. For assistance, contact Disability Services at 303-492-8671 or DSinfo@colorado.edu.

- 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

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 of 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 Student Conduct & Conflict Resolution and will be subject to academic sanctions from the faculty member. Visit Honor Code for more information on the academic integrity policy.

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 at the earliest convenience. We do not require students to state the nature of their illness when alerting us.

Accommodation for Religious Obligations

Campus policy requires faculty to provide reasonable accommodations for students who, because of religious obligations, have conflicts with scheduled exams, assignments, or required attendance. In this

class, please communicate with the instructional team any need for a religious accommodation at the earliest convenience.

Preferred Student Names and Pronouns

CU Boulder recognizes that students' legal information does not always align with how they identify. If you wish to have your preferred name (rather than your legal name) and/or your preferred pronouns appear on your instructors' class rosters and in Canvas, visit the Registrar's website for instructions on how to change your personal information in university systems.

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.

Additional Classroom Behavior Information

- Student Classroom and Course-Related Behavior Policy.
- Student Code of Conduct.
- Office of Institutional Equity and Compliance.

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 OIEC@colorado.edu. Information about university policies, reporting options, and OIEC support resources including confidential services can be found on the OIEC website.

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

Mental Health and Wellness

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.