



AME201: Statics

Units: 4

Fall 2024

#28958: Mon./Wed. at 2:00- 3:50 PM

Location: SGM 601

Instructor: Ramtin Sheikhhassani

Office: OHE 500J

Office hours: TBD

E-mail: sheikhha@usc.edu - Include AME201 in subject
I will respond to emails within 48 hours.

Last edited: 2024-04-02, 10:14:23

Disclaimer: The instructor reserves the right to modify this syllabus as deemed appropriate for the course objectives. Any alterations to the syllabus will be communicated verbally or in writing during class sessions, and will constitute an official amendment to this document. Students are expected to comply with all the revised syllabus provisions.

Course Description

Engineering statics is the branch of mechanics that studies the equilibrium of bodies or systems under static forces, or those that remain constant over time. The determination of the reaction forces and the internal forces within the system is essential for design and analysis of structural components in a safe and efficient manner.

Learning Objectives

- Analysis of forces acting on particles and rigid bodies in static equilibrium.
- Solve equivalent systems of forces.
- Recognize friction and its applications in devices.
- Determine centroids and moments of inertia; .
- Apply energy methods.

Pre-requisites

Calculus I-III: (MATH 125 or MATH 126) and MATH 129 and (MATH 226 or MATH 229)

Recommended co-requisite: MATH 226 or MATH 229

Textbook

Beer FP Johnston ER Mazurek DF. Vector Mechanics for Engineers. Statics. Twelfth ed. New York NY: McGraw-Hill Education; 2019.

*Note: Older editions can be used.

Supplemental Open Educational Resources

- Open Learning Initiative, [Engineering Statics](#) , Carnegie Mellon University
- Gramoll K, [Multimedia Engineering Statics](#), University of Oklahoma
- Baker DW, Haynes W, [Engineering Statics: Open and Interactive](#), Colorado State University and Massachusetts Maritime Academy, 2020
- Osgood E, Cameron G, Christensen E, [Engineering Mechanics: Statics](#) ,University of Prince Edward Island
- Moor et al. [Mechanics Map](#), Pennsylvania State University Mont Alto

Resources

Campuswire We use Campuswire platform to post announcements, Q&A and discussions. Copies of lecture notes, and other class information will be posted on Campuswire.

Gradescope Homework assignments are submitted and graded via Gradescope. Quizzes and exams will be graded via Gradescope after a hard-copy is collected.

Blackboard Blackboard will be only used to post the overall score at the end of semester.

Technological Proficiency and Hardware/Software Required

A scientific calculator will be required.

Communication

Our goal is to foster a conducive learning environment. I welcome your inquiries and feedback on the course. If you have any questions or comments, please approach me directly after class or during my designated office hours. You can also reach me via email. (sheikhha@usc.edu). I will respond to all emails within 48 hours.

Description and Assessment of Assignments

Homework

Weekly problem assignments will be delivered through Gradescope. Handwritten solutions should be scanned and submitted via Gradescope.

Late Work Policy

No late homework will be accepted. Two of the lowest grades in homework assignments will be discarded.

Quizzes

Every week, a quiz will be conducted. The questions will be aligned with the exercises completed in the preceding sessions, the study materials, the homework or the reading tasks. No quiz can be retaken for any cause. As a compensation, two of the lowest scores will be omitted.

Examinations

The course will entail three midterm assessments. The structure will resemble the assigned problem sets ; satisfactory accomplishment of the tasks will signify your proficiency on the examinations.

a. Midterm examinations:

i. Midterm 1: Ch. 1-4

ii. Midterm 2: Ch. 5,6,9

iii. Midterm 3: Ch 7,8,10

A respectable performance on quizzes and exams can be realized by all students if attention and energy are given to the timely completion of assigned homework problems.

Dates

The first two midterm dates will coincide with the regular lecture sessions and remain subject to alteration depending on the course's advancement. Any modification shall be communicated with a fortnight's notice. The registration office determines the immutable date and time for the third examination.

	MT#1	MT#2	MT#3
Date	10/02	11/06	12/13
Time	2pm	2pm	2pm

Grading Breakdown

Assignments	Points	%
Homework	100	10
Quiz	100	15
Max MT	100	30
Mid MT	100	25
Min MT	100	20
Total	500	100

The following notation is used to represent the midterm scores: Max MT denotes the highest score among the three midterms, Min MT denotes the lowest score, and Mid MT denotes the intermediate score.

Grading Scale

Course final grades will be determined using the following scale.

Grade	Total
A	93-100
A-	90-92.99
B+	88-89.99
B	83-87.99
B-	80-82.99
C+	78-79.99
C	73-77.99
C-	70-71.99
D+	68-69.99
D	63-67.99
D-	60-62.99
F	59.99 and below

The overall letter grade will be assigned within three days of grading the final. The grade letters are based on a class average performance of B. If the mean falls below the grade cutoffs of B, the grades will be curved.

Grading Dispute

Any contention regarding the evaluation of one's examination must be resolved within two days of receipt. The entire test under dispute shall undergo a thorough and impartial reassessment, which may result in an augmentation or diminution of the score. Moreover, no extra credit or curve adjustment shall be conferred to the appealed examination

Academic Integrity

The University of Southern California is foremost a learning community committed to fostering successful scholars and researchers dedicated to the pursuit of knowledge and the transmission of ideas. Academic misconduct is in contrast to the university's mission to educate students through a broad array of first-rank academic, professional, and extracurricular programs and includes any act of dishonesty in the submission of academic work (either in draft or final form).

This course will follow the expectations for academic integrity as stated in the [USC Student Handbook](#). All students are expected to submit assignments that are original work and prepared specifically for the course/section in this academic term. You may not submit work written by others or "recycle" work prepared for other courses without obtaining written permission from the instructor(s). Students suspected of engaging in academic misconduct will be reported to the Office of Academic Integrity.

Other violations of academic misconduct include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage.

The impact of academic dishonesty is far-reaching and is considered a serious offense against the university and could result in outcomes such as failure on the assignment, failure in the course, suspension, or even expulsion from the university.

For more information about academic integrity see [the student handbook](#) or [the Office of Academic Integrity's website](#), and university policies on [Research and Scholarship Misconduct](#).

Please ask me if you are unsure about what constitutes unauthorized assistance on an exam or assignment, or what information requires citation and/or attribution.

Collaboration. In this class, you are expected to submit work that demonstrates your individual mastery of the course concepts.

Group work. Unless specifically designated as a 'group project,' all assignments are expected to be completed individually. Computer programs. Plagiarism includes the submission of code written by, or otherwise obtained from someone else.]

Additional Course Policies

Your presence in the class is highly recommended. The treatment of certain topics in the lecture may diverge from the text. You will be accountable for the methods delineated in the class.

Electronic devices such as cellphones, laptops, tablets (except for note-taking purposes) must be switched off during class.

Your final grade will be determined solely by your performance on the above components and irrespective of your financial support needs (e.g., minimum grade requirement for tuition reimbursement).

You must arrange your work-related travel to avoid the mid-term examinations periods. Exceptions to take midterm exams on different dates will be granted only for family emergencies, religious observance and documented illness or health-related emergencies.

Students approved by OSAS should notify the instructor at the commencement of the semester for any accommodation they require.

Course evaluation

Two surveys will gather student opinions about the course: the mid-semester evaluation and the standard USC course evaluation survey at the end of the semester. Your opinion is valued and can make a difference in how this course is conducted; please give your honest and constructive recommendations.

Table 1: Weekly Plan

Day	Date	Topics	Reading	HW/Q
M	08/26/24	Introduction	1	
W	08/28/24	Vectors	2.1-2.3	
M	09/02/24	LABOR DAY		
W	09/04/24	Vector Operations	2.4-2.8	
M	09/09/24	2D Equilibrium	2.9-15	\#1
W	09/11/24	Force Operations	3.1-3.8	\#2
M	09/16/24	Cross Product and couples	3.9-16	
W	09/18/24	Rigid Body Eqs	3.17-321	\#3
M	09/23/24	Equilibrium in 2D	4.1-2	
W	09/25/24	Equilibrium in 3D	4.3	\#4
M	09/30/24	Review for MT1	1-4	
W	10/02/24	MT1	1-4	
M	10/07/24	Centroids	5.1-2	
W	10/09/24	Centroids	5.3-5.4	\#5
M	10/14/24	Moment of Inertia	9	
W	10/16/24	Moment of Inertia	9	\#6
M	10/21/24	Trusses: Joints	6.1-2	
W	10/23/24	Trusses : Sections	6.1-2	\#7
M	10/28/24	Frames	6.3	
W	10/30/24	Machines	6.4	\#8
M	11/04/24	Review for MT2	5-6,9	
W	11/06/24	MT2		
M	11/11/24	Veterans Day		
W	11/13/24	Beams	7.1-2	
M	11/18/24	Beams	7.3	\#10
W	11/20/24	Friction	8	
M	11/25/24	Friction applications	8	\#11
W	11/27/24	Thanksgiving		
M	12/02/24	Virtual Work	10	
W	12/04/24	Virtual Work	10	
Review for MT3	7-8,10	\#12		
12/13/24	MT3	7-8,10		

* This is a tentative schedule, the order of topics might change.

Table 2: Academic sanctions

Violation	USC – Recommended sanction	AME – Recommended sanction
Copying answers from other students ** on any course work	F for course	First offense: F on assignment Second offense: F for course
One person allowing another to cheat from his/her exam or assignment	F for course for both persons	If assignment: First offense: F on assignment Second offense: F for course If exam: F for course
Possessing or using material during exam (crib sheets, notes, books, etc.) which is not expressly permitted by the instructor.	F for course.	First offense: F on exam. Second offense: F for course.
Continuing to write after exam has ended.	F for course.	F on exam
Taking exam from room and later claiming that the instructor lost it.	F for course and recommendation for further disciplinary action (possible suspension)	F for course
Changing answers after exam has been returned.	F for course and recommendation for further disciplinary action (possible suspension)	F for course
Fraudulent possession of exam prior to administration.	F for course and recommendation for suspension.	F for course
Obtaining a copy of an exam or answer key prior to administration	Suspension or expulsion from the university for both students F for course.	F for course
Having someone else complete course work for oneself.	Suspension or expulsion from the university for both students; F for course.	F for course
Plagiarism — Submitting other’s work as one’s own or giving an improper citation.	F for course.	First offense: F on assignment. Second offense: F for course.
Submission of purchased term papers or papers done by others	F for course and recommendation for further disciplinary action (possible suspension).	F for course
Submission of the same assignment, to more than one instructor where no previous approval has been given	F for both courses.	F for both courses
Unauthorized collaboration on an assignment.	F for the course for both students.	First offense: F on assignment. Second offense: F for course
Falsification of information in admission applications (including supporting documentation).	Revocation of university admission without opportunity to reapply	Revocation of university admission without opportunity to reapply
Documentary falsification (e.g., petitions and supporting materials; medical documentation.)	Suspension or expulsion from the university; F for course when related to a specific course.	Suspension or expulsion from the university; F for course when related to a specific course.
Plagiarism in a graduate thesis or dissertation	Expulsion from the university when discovered prior to graduation; revocation of degree when discovered subsequent to graduation.***	Expulsion from the university when discovered prior to graduation; revocation of degree when discovered subsequent to graduation.***

*Assuming first offense

**Exam, quiz, tests, assignments or other course work.

***Applies to graduate students

Statement on Academic Conduct and Support Systems

Academic Conduct

The University of Southern California is a learning community committed to developing successful scholars and researchers dedicated to the pursuit of knowledge and the dissemination of ideas. Academic misconduct, which includes any act of dishonesty in the production or submission of academic work, comprises the integrity of the person who commits the act and can impugn the perceived integrity of the entire university community. It stands in opposition to the university's mission to research, educate, and contribute productively to our community and the world.

All students are expected to submit assignments that represent their own original work, and that have been prepared specifically for the course or section for which they have been submitted. You may not submit work written by others or "recycle" work prepared for other courses without obtaining written permission from the instructor(s).

Other violations of academic integrity include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), collusion, knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage.

The impact of academic dishonesty is far-reaching and is considered a serious offense against the university. All incidences of academic misconduct will be reported to the Office of Academic Integrity and could result in outcomes such as failure on the assignment, failure in the course, suspension, or even expulsion from the university.

For more information about academic integrity see [the student handbook](#) or [the Office of Academic Integrity's website](#), and university policies on [Research and Scholarship Misconduct](#).

Please ask your instructor if you are unsure what constitutes unauthorized assistance on an exam or assignment, or what information requires citation and/or attribution.

Students and Disability Accommodations:

USC welcomes students with disabilities into all of the University's educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at osas.usc.edu. You may contact OSAS at (213) 740-0776 or via email at osasfrontdesk@usc.edu.

Support Systems

Counseling and Mental Health - (213) 740-9355 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

988 Suicide and Crisis Lifeline - 988 for both calls and text messages – 24/7 on call

The 988 Suicide and Crisis Lifeline (formerly known as the National Suicide Prevention Lifeline) provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week, across the United States. The Lifeline is comprised of a national network of over 200 local crisis centers, combining custom local care and resources with national standards and best practices. The new, shorter phone number makes it easier for people to remember and access mental health crisis services (though the previous 1 (800) 273-8255 number will continue to function indefinitely) and represents a continued commitment to those in crisis.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL) – 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender- and power-based harm (including sexual assault, intimate partner violence, and stalking).

Office for Equity, Equal Opportunity, and Title IX (EEO-TIX) - (213) 740-5086

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

The Office of Student Accessibility Services (OSAS) - (213) 740-0776

OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

USC Campus Support and Intervention - (213) 740-0411

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity, Equity and Inclusion - (213) 740-2101

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-1200 – 24/7 on call

Non-emergency assistance or information.

Office of the Ombuds - (213) 821-9556 (UPC) / (323-442-0382 (HSC)

A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

Occupational Therapy Faculty Practice - (323) 442-2850 or otfp@med.usc.edu

Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.