



AME204: Strength of Materials

Units: 3

Spring 2019—Mon/Wed—Time: 2:00-3:20 pm

Location: THH 210

Instructor: Ramtin Sheikhhassani

Office: RRB 217

Office Hours: Mon/Wed 3:30-5:00 pm

Contact Info: sheikhha@usc.edu – Include AME204 in subject

TA: Hao Gao

haogao@usc.edu

Office hours : Thu 10-11AM , VHE 202

Study session: Fri 10:00-10:50:AM VHE 217

Course Description

Strength of Materials is a first course in the field of solid mechanics. Studying the properties and behaviors of materials is crucial in prediction of structural failure in any industry application. This course provides principles of mechanics and their application to analyze basic engineering problems.

Learning Objectives and Outcomes

- Understanding and applying the concepts of stress and strain deflection of mechanical elements due to tension, shear, bending, or torsion; combined loads; energy methods, statically indeterminate structures; strength-based design.

Prerequisite: Statics AME 201 or CE 205

Required Readings

Mechanics of Materials 7th ed. by F.P. Beer, E.R. Johnston, J.T. DeWolf and D.F. Mazurek, McGraw-Hill; ISBN 978-0-07-339823-5

Description and Assessment of Assignments

- 1- **Homeworks:** 12 homeworks will be assigned. Problems will be posted on blackboard.
- 2- **Quizzes :** 10 quizzes will be administered during lecture every Monday.
- 3- **Exams:** The format will be similar to the assigned homework assignments; successful completion of the homework will be a good indicator of your success on the exams.
 - a. **Midterm exams:**
 - i. **Midterm 1:** Monday, February 20, class time. (Ch 1-2)
 - ii. **Midterm 2:** Wednesday, March 20, class time. (Ch 3-5)
 - b. **Final Exam :** Monday May 6, 2:00-4:00PM
The final exam will cover all material presented in the course.

Grading Breakdown

Assignment	Points	% of Grade
Weekly HWs	100	10
Quizzes	100	20
Midterm#1	100	20
Midterm#2	100	20
Final	100	30
TOTAL	500	100

Grading Scale

Course final grades will be determined using the following scale

A	90-100
A-	80-89
B+	70-79
B	60-69
B-	55-59
C+	50-54
C	45-49

Assignment Submission Policy

No late homework will be typically accepted. If accepted, it will be for no more than 1/2 of the graded value. No work will be accepted a week after the due date.

Additional Policies

Some topics in class will be handled differently from the book. You will be responsible for the way things are done in class. Class attendance is strongly encouraged.

Cellphones, laptops, tablets (except for note-taking purposes) and anything else electronic are to be turned off during class.

Final grade will depend entirely on the performance on the above components and be independent of the financial support requirements (e.g., minimum grade requirement for tuition reimbursement).

Please schedule your work-related travel during time periods outside of the mid-term and final exams. Accommodation to take exams on different dates will be made only for family emergencies, religious observance and documented illness or health-related emergencies.

Course Schedule: A tentative weekly breakdown subjected to minor adjustments

Lec.	Date	Principle Topics	Reading	Problem Set	Quiz
1	M Jan 7	Introduction	Ch 1		
2	W Jan 9	Normal and Shear Stress	Ch 1		
3	M Jan 14	Shear Stress and Allowable Stress	Ch 1	HW#1	Q#1
4	W Jan 16	Strain	Ch 2		
MLK					
5	W Jan 23	Material Properties	Ch 2		
6	M Jan 28	Stress-Strain Curve	Ch 2	HW#2	Q#2
7	W Jan 30	Axial Members	Ch 2		
8	M Feb 4	Axial Members	Ch 2	HW#3	Q#3
9	W Feb 6	Indeterminate structures	Ch 2		
	M Feb 11	Stress Concentration		HW #4	
10	W Feb 13	Intro to Torsion	Ch 3		
PRESIDENTS' DAY					
11	W Feb 20	Midterm #1	Ch 3		
12	M Feb 25	Shafts in Torsion: Power Transmission	Ch 5.1	HW#5	Q#4
13	W Feb 27	Shear and Bending moments	Ch 5.2		
14	M Mar 4	Bending	Ch 4	HW#6	Q#5
15	W Mar 6	Bending	Ch 5		
SPRING BREAK					
	M Mar 18	Midterm #2		HW#7	
16	W Mar 20	Transverse Shear	Ch 6		
17	M Mar 25	Thin walled members	Ch 6	HW#8	Q#6
18	W Mar 27	Stress Transformation	Ch 7		
19	M Apr 1	Strain Transformation	Ch 7	HW#9	Q#7
20	W Apr 3	Deflection of Beams	Ch 9		
21	M Apr 8	Deflection of Beams	Ch 9	HW#10	Q#8
22	W Apr 10	Buckling of Columns	Ch 10		
23	M Apr 15	Buckling of Columns	Ch 10	HW#11	Q#9
24	W Apr 17	Energy Methods	Ch 11		
25	M Apr 22	Energy Methods	Ch 11		Q#10
	W Apr 24	Review		HW#12	
	M May 6	Final 2:00-4:00pm			

Statement on Academic Conduct and Support Systems

Academic Conduct:

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, policy.usc.edu/scientific-misconduct.

Support Systems:

Student Health Counseling Services - (213) 740-7711 – 24/7 on call

engemannshc.usc.edu/counseling

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

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call

suicidepreventionlifeline.org

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-4900 – 24/7 on call

engemannshc.usc.edu/rsvp

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity and Diversity (OED) | Title IX - (213) 740-5086

equity.usc.edu, titleix.usc.edu

Information about how to get help or help a survivor of harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants. The university prohibits discrimination or harassment based on the following protected characteristics: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations.

Bias Assessment Response and Support - (213) 740-2421

studentaffairs.usc.edu/bias-assessment-response-support

Avenue to report incidents of bias, hate crimes, and microaggressions for appropriate investigation and response.

The Office of Disability Services and Programs - (213) 740-0776

dsp.usc.edu

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Support and Advocacy - (213) 821-4710

studentaffairs.usc.edu/ssa

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

Diversity at USC - (213) 740-2101

diversity.usc.edu

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

dps.usc.edu, emergency.usc.edu

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) 442-120 – 24/7 on call

dps.usc.edu

Non-emergency assistance or information.