

AME 231L
Mechanical Behavior of Materials
Spring Term 2018

Lectures: VHE 210 M W 10–11am
Lab: KAP B28 T 12–1:50pm, T 2:00–3:50pm, F 10:00 – 11:50am

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Office Hours: Wed 12-2pm or by appointment

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Required Material: Textbook – *Materials Science and Engineering- An Introduction*
Callister & Rethwisch. (9th edition)

Safety Materials – Safety glasses (available in 3rd floor of Bookstore)

Grading:	Lab Reports (4)	40%
	Lab Attendance	10%
	Homework	5%
	Midterm Exam (1)	20%
	Final Exam	25%

Course Topics and Outline

This following is a *tentative* outline of course topics.

<u>WEEK</u>	<u>DATES</u>	<u>LECTURE/LAB TOPICS</u>
1	1/8 – 1/10	Lectures: Introduction to course, students, and Lab TA Lab: Lab Safety 101
2	1/15 – 1/17	Lectures: Stress-strain I Lab: Tensile Testing – Elastic Modulus **<u>No class Mon 1/15 for Martin Luther King, Jr. Day</u>
3	1/22 – 1/24	Lectures: Stress-strain II Lab: Tensile Testing – Yield to Fracture
4	1/29 – 1/31	Lectures: Stress-strain III Lab: Vickers Indentation

5	2/5 – 2/7	Lectures: Stress-strain Compression vs. Tension Lab: Optical Characterization of fracture Samples
6	2/12 – 2/14	Lectures: Stress-strain Compression vs. Tension Lab: Electron Microscopy of Tensile Sample (CEMMA) <u>**No class Mon 2/15 for Presidents Day</u> LAB REPORT #1 DUE (Tensile/compression)
7	2/19 – 2/21	Lectures: Strain Hardening Lab: Deformation by Rolling / Vickers on Rolled Specimens
8	2/26 - 2/28	Lectures: Heat Treatments Lab: Anneal rolled specimens / Vickers of annealed samples EXAM #1 – Monday February 26th
9	3/5 – 3/7	Lectures: Microstructure & Mechanical Behavior I Lab: Polishing for crystallographic information LAB REPORT #2 DUE (Effects of rolling & annealing)
10	3/12 – 3/14	SPRING BREAK – NO CLASS
11	3/19 – 3/21	Lectures: Microstructure & Mechanical Behavior II Lab: Characterization/Testing of Aerospace Materials
12	3/26 – 3/28	Lectures: Steel and Iron alloys Lab: Characterization/Testing of Aerospace Materials (cont.)
13	4/2 – 4/4	Lectures: Porous materials/composites Lab: Characterization/Testing Porous Materials LAB REPORT #3 DUE (Microstructure & Mechanical Behavior)
14	4/9 – 4/11	Lectures: Fracture Behavior Lab: Synthesis/Testing of Composites
15	4/16 – 4/18	Lectures: Fracture Behavior Lab: Strength/Fracture of Composites
16	4/23 – 4/25	Lectures: Fatigue No lab LAB #4 Due (weeks 14 and 15)

5/9 FINAL EXAM (Monday, May 7, 8-10am)

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” <https://policy.usc.edu/student/scampus/part-b>. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct>.

Support Systems:

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

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

<https://engemannshc.usc.edu/counseling/>

National Suicide Prevention Lifeline - 1-800-273-8255

Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. <http://www.suicidepreventionlifeline.org>

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

Free and confidential therapy services, workshops, and training for situations related to gender-based harm. <https://engemannshc.usc.edu/rsvp/>

Sexual Assault Resource Center

For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: <http://sarc.usc.edu/>

Office of Equity and Diversity (OED)/Title IX compliance – (213) 740-5086

Works with faculty, staff, visitors, applicants, and students around issues of protected class.

<https://equity.usc.edu/>

Bias Assessment Response and Support

Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. <https://studentaffairs.usc.edu/bias-assessment-response-support/>

Student Support & Advocacy – (213) 821-4710

Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. <https://studentaffairs.usc.edu/ssa/>