AME 231L

Mechanical Behavior of Materials

Spring Term 2013

Lectures:	VKC 260	M W 10–11am	
Lab:	KAP B39	T 12–1:50pm OR T 2–3:50pm	
Professor:	Professor A.M. Hodge (ahodge@usc.edu) Office: RTH 503 Office Hours: TBA		
TA:	Tim Furnish (tfu Office Hours: T	urnish@usc.edu) BA	
Required Material:	Textbook – Engineering Materials 1, An Introduction to Properties, Applications, and Design, Michael F. Ashby / David R.H. Jones		
	Safety Materials	– Safety glasses (available in 3 rd floor of Bookstore)	
Grading:	Lab Reports (4)	40%	
	Attendance	10%	
	Homework	10%	
	Midterm Exam ((1) 20%	
	Final Exam	20%	

Course Topics and Outline

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

WEEK	LECTURE/LAB TOPICS		
1	Lectures:	Introduction to course, students, and Lab TA	
	Lab:	Lab Safety 101	
2	Lectures:	Stress-strain curves I	
	Lab:	Tensile Testing – Elastic Modulus	
	**No class N	Ion 1/21 for Martin Luther King, Jr. Day	
3	Lectures:	Stress-strain curves II	
	Lab:	Tensile Testing – Yield to Fracture	
4	Lectures:	Stress-strain curves III	
	Lab:	Optical Characterization of Tensile Samples	

5	Lectures: Lab:	Compression vs. Tension Vickers Indentation LAB REPORT #1 DUE (Tensile Tests)	
6	Lectures: Lab: **No class M	Strain Hardening Deformation by Rolling / Vickers on Rolled Specimens Mon 2/18 for Presidents Day	
7	Lectures: Lab:	Heat Treatments Annealing rolled specimens / Vickers of annealed samples EXAM #1 – Wednesday Feb 27 th	
8	Lectures: Lab:	Microstructure & Mechanical Behavior I Polishing for crystallographic information	
9	Lectures: Lab:	Microstructure & Mechanical Behavior II – Aerospace Metals Vickers, Polishing, Etching, Optical Characterization LAB REPORT #2 DUE (Compression vs. Tensile, Effects of rolling & annealing)	
10	SPRING BR	SPRING BREAK – NO CLASS	
11	Lectures: Lab:	Microstructure & Mechanical Behavior II (cont'd) – Aerospace Metals Vickers, Polishing, Etching, Optical Characterization (cont'd)	
12	Lectures: Lab:	Corrosion of Metals I Preparation of Corrosive Environments LAB REPORT #3 DUE (Microstructure & Mechanical Behavior)	
13	Lectures: Lab:	Corrosion of Metals II – Fracture Optical Characterization & Vickers of Corrosion Specimens	
14	Lectures: Lab:	Ductile/Brittle Transition in Metals Vickers of LN ₂ cooled specimens	
15	Lectures: Lab:	Plastics & Composites Synthesis/Testing of Composites LAB #4 DUE (Environmental Effects on Metals)	
16	Lectures: Lab:	Ceramics Strength/Fracture of Ceramics	

Statement on Academic Integrity

All USC students are responsible for reading and following the Student Conduct Code, which appears in the Scampus and at http://www.usc.edu/dept/publications/SCAMPUS/goverance.

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own.

Special Accommodations

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to the instructor as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.-5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.