

CE334
Spring 2004

**Mechanical Behavior of
Engineering Materials**
(Experimental Analysis of Engineering Materials)

Prof. Yan Xiao
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<http://www-classes.usc.edu/engr/ce/334/>

GENERAL INFORMATION

The course involves lectures and laboratory work. The course is focused on the study of actual mechanical behavior of engineering materials through experimental methods. The theoretical background and technique for testing are extensively discussed. The lab work involves several major projects as well as various testing demonstrations. Most of the projects involve specimen design, analysis, instrumentation, theoretical prediction, etc. The class is divided into groups, with each group responsible for all aspects of the particular projects.

Texts: Class and lab will be mainly based on lecture notes (available, soon, over the web). There are no required texts. The followings are relevant reference texts.

“The Science and Technology of Civil Engineering Materials,” J. F. Young; S. Mindess; R.J. Gray; and A. Bentur, Prentice Hall, 1998.

“The Testing of Engineering Materials,” H.E. Davis, G.E. Troxell and G.F.W. Hauck, McGraw-Hill Book Company.

“Design and Control of Concrete Mixtures,” S.H. Kosmatka and W.C. Panarese, Portland Cement Association.

"Mechanical Behavior of Materials," Engineering Methods for Deformation, Fracture, and Fatigue, Norman E. Dowling.

"Experimental Stress Analysis," The Third Edition, James W. Dally and William F. Riley.

Grading: Final grade (100%) will be composed of

- 5% Attendance record for lecture and lab
- 20% Homework and Project Report
- 30% Midterm Exams, 1 and 2
- 25% Final Exam
- 20% Class project and presentation

Grade ranges: 60-69: C-, C and C+; 70-84: B-, B, B+; 85-100: A-, A, A+.

	<u>Location</u>	<u>Time</u>
Lecture	KAP 163	11:00am-12:20pm TTh
Lab	KAP Sub-Basement B239	2-4:50pm MTTh 8-10:50am W

Lab Manager Mr. Lance Hill, Tel. 740-0599, office, KAP B 28

TA Mr. Choi, Kang Kyu; Mr. Jahanshahi, Mohammad Reza

Final Exam: Thursday, May 6, 11:00-1:00pm.

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First Half:

Week	Date	Lecture	Topics	Laboratory Project	HW
1	1/13	1	Chp-1 Lab tour, group assignment	Lab tour	
	1/15	2	Chp-1 Introduction and general.		HW1
2	1/20	3	Chp-2 Mechanical Behavior	Project-1.1 Lab Tour and Group assignment	HW1
	1/22	4	Chp-2 cont.		
3	1/27	5	Chp-3 Methods for Exp. Analysis	Project-2.1 Tensile Tests	HW2
	1/29	6	Chp-3 cont.		
4	2/3	7	Chp-3 cont.	Project-3.1 Strain Gauge	
	2/5	8	Chp-4 Basic Mechanical Tests		
5	2/10	9	Chp-4 cont.	Project-3.1 cont.	HW3
	2/12	10**	Midterm Exam-1.		
6	2/17	11	Chp-5 Experimental Analysis of Structural Elements	Project-4.1 Compression and bending	
	2/19	12	Chp-5 Exp. Analysis.		
7	2/24	13	Chp-6 Construction Materials –steel	Project-4.2 Impact and Hardness	HW4
	2/26	14	Chp-7 Concrete Technology		
8	3/2	15	Chp-7 cont.	Project-5.1 Stress Analysis of Steel Beam	HW5
	3/4	16	Chp-7 cont.		

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Second Half:

Week	Date	Lecture	Topics	Laboratory Project	
9	3/9	17	Chp-7 cont.	Project-5.1 cont.	HW6
	3/11	18**	Midterm Exam-2.		
10	3/16	NO!	☺ <i>Spring recess!</i> ☺	<i>Spring recess!</i>	☺
	☺ 3/20	NO!	☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺		
11	3/23	19	Chp-8 Introduction to New Materials	Project-6.1 Concrete (design & aggregates test)	
	3/25	20	Chp-8 cont.		
12	3/30	21**	Assignment of class projects	Project-6.1 cont. (casting concrete)	
	4/1	22	(Guided discussion on class projects)		
13	4/6	23	(Guided discussion on class projects)	Class projects	
	4/8	24	Industrial forum		
14	4/13	25	Class projects	Class projects	
	4/15	26	Class projects		
15	4/20	27	Class projects	Class projects	
	4/22	28	Class projects		
16	4/27	29	Presentation-1	Project-6.1 cont. (testing and competition!)	
	4/29	30	Presentation-2		
17	5/6	-	Final Exam. 11:00-1:00pm.		