

CE 60 The Structure and Properties of Civil Engineering Materials

Date	Lectures	Reading Assignment
Aug. 25	Introduction	
30	Atomic Structure and Bonding	Lecture notes
Sept 1	Crystal Structures	reader pp. 3-22
6	Mechanical Properties	reader pp. 46-64
8	Alloys and their Phase Diagrams	reader pp. 95-136
13	Alloys and their Phase Diagrams	reader pp. 95-136
15	Equilibrium Microstructure of Steel Alloys	reader pp. 137-148
20	Phase Transformations	reader pp. 23-38
22	Heat Treatment of Steel Alloys	reader pp. 148-178
27	Review	
29	FIRST MIDTERM	
Oct 4	Introduction to Concrete	M&M** pp. 3-19
6	Hydraulic cements	M&M pp. 191-217
11	Proportioning of Concrete Mixes	M&M pp. 307-320

	13	Aggregates for concrete	M&M pp. 241-264
	18	Properties of fresh concrete	M&M pp. 329-350
	20	Microstructure of cement paste	M&M pp. 21-43
	25	Strength of concrete	M&M pp. 47-71
	27	Elastic behavior, shrinkage, and creep	M&M pp. 79-100
	1	Temperature effects in concrete	M&M pp. 100-110
Nov	3	SECOND MIDTERM	
	10	Durability of Concrete	M&M pp. 113-174
	15	Durability of Concrete II	M&M pp. 113-174
	17	Environmental Impact of Concrete	M&M pp. 641-652
	22	Microstructure and mechanical properties of wood	notes
	29	Shrinkage and creep of wood	notes
Dec	1	Polymeric Materials	notes

Grade: CE 60 two midterms 15% each + HW 10% + Lab reports 20% + final 40%

E 47 midterm 2 20% + HW 10% + lab reports 20% + final 50%

Textbooks:

*Foundation of Materials Science and Engineering, W.F. Smith, McGraw-Hill. (ASUC has a special printout)

**Concrete: Structure, Properties and Materials by Mehta and Monteiro, Fourth Edition, McGraw-Hill 2014.

Office hours: M 1-2 pm and TuTh 10-11 am in 725 floor Davis Hall.

Late HW Policy: 50% off if handed in the next lecture (please do not place it in my mailbox or under the door of my office...). HW will not be accepted after that.

Policy regarding reviews of the midterms: You're welcome to bring your exam to discuss until the last day of class.

In case you bought different editions of the Smith's textbook

Reading Assignment for Smith's 4th edition

Lectures	Reading Assignment
Introduction	
Atomic Structure and Bonding	
Crystal Structures	Smith, Chapter 3 pp. 49-82
Mechanical Properties	Smith Chapter 6 pp. 169-198
Alloys and their Phase Diagrams	Smith Chapter 8 pp. 239-270
Alloys and their Phase Diagrams	Smith Chapter 8 pp. 239-270
Equilibrium Microstructure of Steel Alloys	Smith Chapter 9 pp. 292-307
Phase Transformations	Smith Chapt. 4 pp. 124-144
Heat Treatment of Steel Alloys	Smith Chapt. 9 pp. 307-314
Composite Materials	Smith Chapter 12, 396-411

Reading Assignment for Smith's 3rd edition

Lectures	Reading Assignment
Introduction	
Atomic Structure and Bonding	Smith* pp. 19-60
Crystal Structures	Smith pp. 67-81; 90-97
Mechanical Properties	Smith pp. 193-215
Alloys and their Phase Diagrams	Smith pp. 379-417
Alloys and their Phase Diagrams	Smith pp. 379-417
Equilibrium Microstructure of Steel Alloys	Smith pp. 427-442
Phase Transformations	Smith pp. 117-136
Heat Treatment of Steel Alloys	Smith pp. 442-469
Composite Materials	

Reading Assignment for Mehta & Monteiro 3rd edition

Introduction to Concrete	M&M** pp. 3-20
Hydraulic cements	M&M pp. 203-230
Proportioning of Concrete Mixes	M&M pp. 317-339
Aggregates for concrete	M&M pp. 253-279
Properties of fresh concrete	M&M pp. 341-364

Microstructure of cement paste	M&M pp. 21-47
Strength of concrete	M&M pp. 49-84
Elastic behavior, shrinkage, and creep	M&M pp. 85-108
Temperature effects in concrete	M&M pp. 108-120
Durability of Concrete	M&M pp. 121-182
Durability of Concrete II	M&M pp. 121-182
Environmental Impact of Concrete	M&M pp. 633-645

UNIVERSITY OF CALIFORNIA

DEPARTMENT OF CIVIL & ENVIRONM. ENG.

Fall Semester, 2016

CE 60 PROPERTIES OF CIVIL ENGINEERING MATERIALS

LABORATORY SCHEDULE

Experiments	Lab Sec.1	Lab Sec. 2	Lab Sec. 3
	Monday	Tuesday	Thursday
Experiment I: Stress-Strain Behavior of Bungee Cords:	Aug. 29	Aug. 30	Sept. 1
Experiment II: Tensile Test of Steel	Sept. 12	Sept. 13	Sept. 15
Experiment III: Steel Heat Treatment -Jominy Test	Sept. 19	Sept. 20	Sept. 22

Demonstration Lab	Sept. 26	Sept. 27	Sept 29
Experiment IV: Concrete Mix Design (Trial Batch Method)	Oct. 3	Oct. 4	Oct. 6
Experiment V: Concrete Mix Design (ACI Method)	Oct. 10	Oct. 11	Oct. 13
High-Strength Concrete Competition	Oct. 17	Oct. 18	Oct. 20
Experiment VI: Measurement of Mechanical Properties of Concrete (Test 6x12's)	Oct. 24	Oct. 25	Oct. 27
Experiment IV (Continuation): Mechanical Tests on Trial Batch Mixes	Oct. 31	Nov. 1	Nov. 3
Experiment V (Continuation): Mechanical Tests on ACI Mixes	Nov. 7	Nov. 8	Nov. 10
Experiment VII: Measurement of Mechanical Properties of Wood	Nov. 14	Nov. 15	Nov. 17

Note: All the labs will be performed in the 2nd floor of Davis Hall