MSE 125 MATERIALS SCIENCE AND GENERAL CHEMISTRY
SPRING 2015 **(SECTION 01)**

INSTRUCTOR	Assist. Prof. Dr. İlkay Kalay **Office:** N-B11 **E-mail:** ikalay@cankaya.edu.tr **Office Hours:** Friday 9:20-11:10* *Use e-mails as much as possible out of office hours
TAs	Emre Yilmaz **Office:** N-C08 **E-mail:** emreyilmaz@cankaya.edu.tr
SCHEDULE	**Lecture:** Tuesday 14:20-17:10 (L-A15) **Recitation:** Friday 10:20-12:10 (L-A15)

COURSE DESCRIPTION

This course is a four credit course emphasizing the classification of the materials, atomic structure, periodic table, molecular structure, bonding in solid materials, structure of crystalline solids, mechanical properties of the materials, phase diagrams and use of ceramics, glasses and composites, material selection, and design.

ANNOUNCEMENTS

Check course website, *http://mse125.cankaya.edu.tr/* frequently for announcements about the course, lecture notes, laboratory manuals, homework assignments and etc.

TEXTBOOK

W.D. Callister, Jr., D. G. Rethwisch, *Materials Science and Engineering: An Introduction*, John Wiley and Sons, 8th edition, 2000.

GRADING

Midterm I	25 %
Midterm II	25 %
Quiz	10 %
Final Examination	35 %
Attendance*	5 %
TOTAL	100 %

*Minimum of 70 % attendance in class is mandatory.

COURSE OUTLINE

Week	Dates	Topics Covered	Chapters
1	9 Feb. – 13 Feb.	Definition and classification of materials	CH. 1, 13, 15, 16
2	16 Feb. – 20 Feb.	Atomic structure, periodic table, molecular structure, bonding	CH. 2
3	23 Feb. – 27 Feb.	Structure of Crystalline Solids	CH. 3
4	2 Mar. – 6 Mar.	Imperfections in Solids	CH. 4
5	9 Mar. – 13 Mar.	Diffusion in Solids	CH. 5
6	16 Mar. – 20 Mar.	Mechanical Properties of Metals I, (Test methods; Stress-strain curves)	CH. 6
7	23 Mar. – 27 Mar.	Mechanical Properties of Metals II (Strength, ductility, toughness, resilience)	CH. 6, 7
8	30 Mar. – 3 Apr.	Failure I (Fracture, types of fracture, fracture mechanisms, impact test)	CH. 8
9	6 Apr. – 10 Apr.	Failure II (Fatigue and creep)	CH. 8
10	13 Apr. – 17 Apr.	Phase Diagrams I (basics)	CH. 9
11	20 Apr. – 24 Apr.	Phase Diagrams II (Iron-carbon)	CH9
12	27 Apr. – 1 May	Ceramics, Polymers and Metals	CH. 11, 13, 15
13	4 May – 8 May	Composites and Advanced Materials	CH. 16
14	11 May – 15 May	Overview	

Attendance: Minimum of 70 % attendance in class is mandatory.