



SYLLABUS

Course: Principles of Engineering Materials - Vk 250

Class Location: F110

Class Times: Mondays 18:20-20:00; Wednesdays 10-11:40; Fridays 14-15:40

Book: *Materials Science and Engineering: An Introduction* by William D. Callister, Jr. and David. G, Rethwisch, 8th Edition.

ISBN: 978-0-470-41997-7

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Office Hours: Mondays 13:30-15:00, Thursdays 15:00-16:30, from February 29, 2016

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Office: Yu Liming Center, Discussion Room 1

Course Description

Prerequisite: Vc210, Chemistry

Introductory course to engineering materials. Properties (mechanical, thermal and electrical) of metals, polymers, ceramics and electronic materials. Correlation of these properties with: (1) their internal structures (atomic, molecular, crystalline, micro- and macro-); (2) service conditions (mechanical, thermal, chemical, electrical, magnetic, and radiation); and (3) processing.

Grading System:

Top few	A+	[67, 70)	C+
[90, 100)	A	[65, 67)	C
[85, 90)	A-	[62, 65)	C-
[80, 85)	B+	[60, 62)	D
[75, 80)	B	[0, 60)	F
[70, 75)	B-		

Grading Policy

Item	Portion of Class	Percentage
Homework+Quizzes	ALL	25
Midterm	TBD	35
Final	Comprehensive	40



Random quizzes are given weekly to check attendance, and extra credit is given for correct answers.

Prof. Shen's Classroom Policies

Expectations

Bring your book, calculator, notes, and an open mind to class every day. Class participation is strongly encouraged.

Make-up homework

Homework is due at the beginning of class on due date. Late work receives 10% reduction per day.

Make-up exams

No make-up quizzes or exams will be given except in cases of emergency.

Class attendance

Class attendance will be taken at the instructor's discretion. Missing 2 random class attendance checks will result in a 5% grade reduction. Missing more attendance checks will result in an additional 5% grade reduction per class!

Dishonesty

Any form of dishonesty or falsehood related to the general conduct of the class (exams, homework, project, quizzes, attendance, etc.) will be considered a major offense and will be brought before the Honor Council for appropriate action.

Cellphones and texting

Cellphones must be turned off or be in the silent mode during class hours. Cellphone operation (including reading or sending text messages) will be considered as cheating during exams.



Tentative Schedule for Vk250 Principles of Engineering Materials, Spring 2016			
Week	Date	Topic	Chapter Reading
1	Feb. 22	Introduction to Materials Science and Engineering	1
1	Feb. 24	Atomic Structure and Bonding in Solids	2
1	Feb. 26	Structures of Crystalline Solids	3
2	Feb. 29	Structures of Crystalline Solids/Imperfections in Solids	3-4
2	Mar. 2	Imperfections in Solids	4
2	Mar. 4	Diffusion in Solids	5
3	Mar. 7	Mechanical Properties	6
3	Mar. 9	Mechanical Properties/Dislocations and Strengthening Mechanisms in Metals	6-7
3	Mar. 11	Dislocations and Strengthening Mechanisms in Metals	7
4	Mar. 14	Failure of Metals	8
4	Mar. 16	Phase Diagrams for Metallic Systems	9
4	Mar. 18	Midterm Exam Review	
5	Mar. 21	Midterm Exam (Chapters 1-8 Only)	
5	Mar. 23	Phase Diagrams for Metallic Systems	9
5	Mar. 25	The Kinetics of Phase Transformations	10
6	Mar. 28	Metal Alloys - Applications and Processing	11
6	Mar. 30	Ceramic Materials - Structures and Properties	12
6	Apr. 1	Ceramic Materials - Applications and Processing	13
7	Apr. 4	<i>Tomb Sweeping Festival (no class)</i>	
7	Apr. 6	Structures of Polymers	14



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7	Apr. 8	<i>Anniversary of SJTU (no class)</i>	
8	Apr. 11	Polymers - Characteristics, Applications, and Processing	15
8	Apr. 13	Composite Materials	16
8	Apr. 15	Corrosion and Degradation	17
9	Apr. 18	Electrical Properties of Materials	18
9	Apr. 20	Thermal Properties of Materials	19
9	Apr. 22	Final Exam Review	
10	TBD	Final Exam (Chapters 1-18)	

