

Materials Science and Manufacturing

ENGR 01.283 Spring 2013

TR 10:15 am – 12:05 pm ROW 117

Instructor: T.R.Chandrupatla, P.E., Professor and Founding Chair
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Homework assigned is due on Thursday of the following week. Any reading assignments are to be completed by the next class meeting. Homework must be carried out on engineering paper and neatly stapled. Each student must prepare a portfolio file for the course.

Exams and Quiz: There will be one Midterm Exam, and one Final Exam. The Final will cover the entire material of the course with about 70% emphasis on the material covered from the Midterm.

Grading Policy:

1 Midterm	35 points
1 Final Exam	45 points
Homework and Assignments	20 points
TOTAL	100 points

Regular attendance is expected.

Materials Science and Manufacturing

ENGR 01.2283 Spring 2013

T.R.Chandrupatla, P.E.

Text Book: M.P. GROOVER, *Fundamentals of Modern Manufacturing, Materials, Processes, and Systems*, Fifth Edition, John Wiley and Sons, New York, 2013

Session	Topics	Remarks
1 22, 24	Introduction Atomic Structure and Interatomic Bonding	Ch. 1 Ch. 2
2 Jan 29, 31	Crystalline Solids Imperfections in Solids	Ch.2 Ch. 2
3 Feb 5, 7	Mechanical Properties Mechanical Properties	Ch. 3
4 Feb 12, 14	Physical Properties of Materials Phase Diagrams	Ch. 4 Ch. 6
5 Feb 19, 21	Ferrous and Nonferrous Alloys Heat Treatment of Steels	Ch. 6 Ch. 26
6 Feb 26, 28	Ceramics Polymers and Elastomers	Ch. 7 Ch. 8
7 Mar 5, 7	Composites	Ch. 9
8 Mar 12, 14	MIDTERM Introduction to Manufacturing	
9 Mar 18-22	SPRING BREAK	
10 Mar 26, 28	Fundamentals of Metal Casting Metal Casting Processes	Ch. 10 Ch. 11
11 Apr 2, 4	Processing for Plastics Polymer Matrix Composites	Ch. 13 Ch. 14
12 Apr 9, 11	Fundamentals of Metal Forming Bulk Deformation Processes	Ch. 17 Ch. 18
13 Apr 16, 18	Powder Metallurgy Sheet Metal Working	Ch. 15 Ch. 19
14 Apr 23, 25	Welding, Brazing, and Soldering Principles of Metal Machining	Ch. 29, 30 Ch. 20
15 Apr 30, May 2	Machining Operations Cutting Tool Technology, Grinding	Ch. 21 Ch. 22. 24
16 May 7-11	FINALS	