

## MET/MSE 201: Elements of Material Science

### Course Information:

Course title: Elements of Materials Science

Course number: MET/MSE 201

Course credits: 3 credits

Prerequisites: Chem 111

### Instructor Information:

Instructor: Dr. Alan Place

Office: McClure Hall, Room 301C

Office Phone: 885-7207

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### Assigned Text:

*The Science & Engineering of Materials, 4<sup>th</sup> Edition*, D.R. Askeland and P.P. Phule, Thompson/Brooks-Cole (2003).

### Course Scope:

This course is designed to introduce sophomore level students in metallurgical engineering and materials science to the principles relating to properties of metals, ceramics, polymers and composites to their structures.

### Course Learning Goals:

#### Course Topics:

1. Atomic structure
2. Atomic arrangement
3. Imperfections
4. Mechanical properties
5. Atomic movement, diffusion
6. Strain hardening and annealing
7. Solidification
8. Solid solutions and phase equilibria
9. Ferrous and non-ferrous metals
10. Ceramics
11. Polymers
12. Composites
13. Corrosion

#### Course Calendar/Schedule:

Lesson	Subject to be covered
1	Introduction
2	Ch. 2 Atomic structure, bonding
3	Ch. 3 Atomic arrangement, crystal structures

	<b>NO CLASS – UI CLOSED</b>
4	Ch. 3 Atomic arrangement, crystal structures
5	Ch. 4 Imperfections
6	Ch. 4 Imperfections
7	Ch. 4 Imperfections
8	Ch. 6 Mechanical properties
9	Ch. 6 Mechanical properties
10	Ch. 6 Mechanical properties
	<b>Exam 1</b>
11	Ch. 6 Mechanical properties
12	Ch. 6 Mechanical properties
13	Ch. 6 Mechanical properties
14	Ch. 5 Atomic movement, diffusion
15	Ch. 5 Atomic movement, diffusion
16	Ch. 5 Atomic movement, diffusion
17	Ch. 7 Strain hardening & annealing
18	Ch. 7 Strain hardening & annealing
19	Ch. 7 Strain hardening & annealing
20	Ch. 8 Solidification
21	Ch. 8 Solidification
	<b>Exam 2</b>
22	Ch. 8 Solidification
23	Ch. 9 Solid solutions & phase equilibria
24	Ch. 9 Solid solutions & phase equilibria
25	Ch. 10 Dispersion strengthening, eutectics
26	Ch. 10 Dispersion strengthening, heat treatments
27	Ch. 12 Ferrous metals
28	Ch. 12 Ferrous metals
29	Ch. 13 Non-ferrous metals
30	Ch. 13 Non-ferrous metals
31	Ch. 14 Ceramics
32	Ch. 14 Ceramics
	<b>Exam 3</b>
33	Ch. 15 Polymers
34	Ch. 15 Polymers
35	Ch. 16 Composites
	<b>Fall Recess</b>
36	Ch. 16 Composites
37	Ch. 22 Corrosion
38	Ch. 22 Corrosion
39	Ch. 22 Corrosion
40	Ch. 22 Corrosion
41	Ch. 22 Corrosion
	<b>Final exam will be given according to UI schedule</b>

**Disability Support Services Reasonable Accommodations Statement:**

**Reasonable accommodations are available for students who have a documented disability. Please notify the instructor during the first week of class of any accommodation(s) needed for the course. Late notification may mean that requested accommodations might not be available. All accommodations must be approved through Disability Support Services located in the Idaho Commons Building, Room 333.**

- **885-7200**
- **email at <dss@uidaho.edu>**
- **website at <www.access.uidaho.edu> or <www.webs.uidaho.edu/aap>**