

**EGR 221 Materials Science
Fall 2015, Mid-term Exam 3
Study Guide**

**Read a phase diagram to determine composition of each phase and amount of each phase present.*

The exams will be closed book, closed notes, NO calculator

You should understand the vocabulary terms sufficiently well to answer “fill in the blank” or multiple-choice type questions. In some instances (marked with *) you will need to have a “working knowledge” (i.e. be able to solve related problems).

And yes, points may be deducted if units and significant figures are not properly utilized, or if problem solving format is not clear.

Chapter 4

Slip, Slip system, slip plane, slip direction

lattice strains

resolved shear stress (no need to memorize equations, but should know how to use them).

critical resolved shear stress

solid solution strengthening

grain size strengthening

strain hardening

Chapter 8

cold working, cold rolling, strain hardening, work hardening

hot working, hot rolling

recovery, recrystallization, grain growth:

recrystallization temperature

annealing

describe the process of grain size reduction

Chapter 10

phase

phase diagram*

component

system

homogeneous

nonhomogeneous, inhomogeneous

solubility limit

equilibrium

free energy