

**EGR 221 Materials Science
Fall 2015, Mid-term Exam 4
Study Guide**

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).

Chapter 10 (even though these were on exam 3, they are still relevant)

phase
phase diagram*
component
system
homogeneous
nonhomogeneous, inhomogeneous
solubility limit
equilibrium
free energy
**Read a phase diagram to determine composition of each phase and amount of each phase present.*

Chapter 11

dispersion strengthening
intermetallic compound (what are they, and what are their general properties)
invariant point
eutectic reaction
eutectic temperature
eutectic composition
eutectic microstructure
primary α (or primary β)
hypereutectic composition
hypoeutectic composition

Read a eutectic phase diagram to determine composition of each phase, amount of each phase present, and describe the microstructure that is

formed (including such things as “primary α ” and eutectic microstructure”

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