EGR 221 Materials Science
Exam 1, Study Guide

The exam will be closed book, closed notes.

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).

CH 2
covalent bond
ionic bond
metallic bond
secondary bonding
van der Waals bond
valence electrons
mole

CH 3:
unit cell
crystal structure
crystal system
lattice
atomic packing factor (APF)*
body-centered cubic (BCC)
face-centered cubic (FCC)
hexagonal close-packed (HCP)
coordination number
linear atomic density
planar atomic density

Also: draw appropriate planes and directions for given indices, and to determine the correct indices for given planes and directions.

CH 4
alloy
point defect
vacancy
solid solution
solute
solvent
self-interstitial
substitutional solid solution
interstitial solid solution
dislocation
anisotropic
isotropic
crystalline
polycrystalline
grain size*
grain
grain boundary
twin

* these definitions may also require knowing and applying the related equation. For example, you should be able to determine the grain size if given a photomicrograph.