The exams 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). For example, you should be able to determine the planar atomic density given a plane and crystal structure.

Chapter 6

- calculate engineering normal strain, memorize \( \varepsilon = \frac{l_i - l_o}{l_o} \)*
- calculate engineering normal stress, memorize \( \sigma = \frac{F}{A_o} \)*
- shear stress (define in words)
- normal stress (define in words)
- hardness (define, convert between scales and determine based on \( \sigma_{UT} \) and visa versa)
- Hooke’s Law to determine modulus of elasticity (memorize \( E = \frac{\sigma}{\varepsilon} \))*
- modulus of elasticity/Young’s modulus
- Poisson’s ratio, memorize \( \nu = -\frac{\varepsilon_l}{\varepsilon_a} \)*
- elastic deformation
- plastic deformation
- ductility (describe with words as well as equations, %EL, %RA)
- toughness
- tensile strength/ultimate tensile strength
- yield strength/yield point/yield stress

ALSO:

Be able to “read” a stress-strain diagram to determine the ductility (%EL), toughness, Young’s modulus, proportional limit, yield strength, and tensile strength

* these definitions may also require knowing and applying the related equation.

Chapter 7

- Slip, Slip system, slip plane, slip direction
- lattice strains
- resolved shear stress
- critical resolved shear stress
- cold working, cold rolling, strain hardening, work hardening
- hot working, hot rolling
- solid solution strengthening
- grain size reduction
- recovery
- recrystallization
- grain growth
- recrystallization temperature

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