

Study Guide for final to be given.

Closed book, closed notes except for two, 8.5" by 11" spike sheets.

The homework is a good guide to what sort of exam problems may show up. My emphasis or lack thereof on material is a good guide to what I think is and is not important. You are also responsible for material covered in lecture but not in text or handouts. The final is cumulative, but I will stress later material. I expect that there will be about six-seven questions.

The chapters below refer to the text.

Chapter 6 Study all. Be quantitative on energies of simple low angle boundaries and calculation of dihedral angles. On special or coincident site boundaries know what they are and what their thermodynamic and kinetic properties are.

Chapter 8 This is an important chapter. Study all, plus my added material on the effects of second phase particles on annealing. Be quantitative on the annealing of one phase materials. You should know generally how the derivations of the effects of impurities and particles on annealing are done, and what the consequences are.

Chapter 9 Study all. Understand impurity atmospheres around dislocations and how such atmospheres affect mechanical properties.

Chapter 15 Concentrate on nucleation and growth in solids and liquids. Be sure to understand the effects of coherency strain on nucleation in solids. You should understand and be able to use the equation for homogeneous nucleation in solids. Understand spinodal decomposition well enough to define the terms and understand what the equations describe.

Chapter 16 Study all plus the extra material on particle coarsening.

Strengthening Mechanisms: You are responsible for the material in the handout.

Hard and Soft Magnetic Materials, Semiconductor Interconnects, Al-based alloys and Ti-based alloys: Study the handouts. Be prepared to write an essay on any of these topics, as a one-pager for a boss.