MATRL 100A: Structure and Properties I, Syllabus for finals:

You are allowed a calculator, and one sheet (one-side) of letter-size paper with no sketches/drawings

1. Ch. 4: Imperfections in solids; Vacancies, interstitials, Schottky, Frenkel, edge and screw dislocation.

2. Ch. 12: The structures of ceramics: Crystal structures, carbon.

3. Ch. 14: Polymer structure; The chemistry of polymer molecules, molecular structures, molecular configuration.

4. Ch. 18: Electrical properties; Ohms law, conductivity, resistance and resistivity, energy bands in solids, metal and semiconductors, intrinsic and extrinsic semiconductors, temperature dependence of electrical resistivity, p and n doping, diodes and rectification, capacitance, ferroelectrics.

5. Ch. 19: Thermal properties; Heat capacity, thermal expansion, thermal conductivity.

6. Ch. 21: Optical properties: Light-solid interactions, refractive index, Snell's law, critical angle, absorption of light, basics of color, reflectivity of metals, semiconductors and band gaps, optical fibres.