

Mid-Session Exam 1hr 20%

Literature:

- Textbook: *Solid State Physics*, Hook & Hall
- Lecture notes on the Web
[/www.phys.unsw.edu.au/~kmy](http://www.phys.unsw.edu.au/~kmy)
 - Michael Kuchiev

- Symmetry and crystal structure (Ch 1,11 Hook & Hall)
 - Crystal lattice
 - Translational invariance, Bravais lattices
 - Wigner-Zeitze cell
 - Planes in crystals, Miller indexes
 - Reciprocal lattice
 - Relation between vectors in the reciprocal lattice and planes in the original lattice (orientation, absolute value).
 - The Brillouin zone
 - X-ray scattering
 - Bragg's law, Laue condition

- Crystal dynamics, phonons (Ch 2)
 - Simplest description of acoustic waves
 - Chain of atoms
 - Acoustic waves and optical phonons
 - The phonon
 - Heat capacity of an oscillator
 - Heat capacity due to phonons (this one is not included in the mid-session exam)