A1 Statistical and Thermal Physics

Basic Thermodynamics (Prof. Andrew Boothroyd, 7 lectures, Michaelmas Term 2013)

Lecture plan:

Week	Day	Topics
3	Fri	First Law of Thermodynamics, temperature, Zeroth Law, thermomenters, exact differentials, heat capacities
4	Wed	Thermodynamic processes, isothermal and adiabatic expansions of ideal gases, Second Law of Thermodynamics (Clausius and Kelvin statements, heat engines, Carnot cycle, thermodynamic efficiency
4	Thur	Carnot's theorem, equivalence of Clausius & Kelvin statements of 2nd law, refrigerators and heat pumps, Clausius' theorem
*** All the material required for Problem Set 1 has now been covered **		
4	Fri	Entropy, maximum entropy principle, entropy changes, Joule expansion as example of irreversible process
5	Wed	Gibbs' paradox, Maxwell's demon, thermodynamic potentials, Availability principle for equilibrium
5	Thur	Maxwell relations, thermodynamic coefficients and moduli, and Relations between them
5	Fri	Non p–V systems, elasticity, surface tension, paramagnetism, magnetic cooling

*** All the material required for Problem Set 2 has now been covered **