PHYS20352: Thermal and Statistical Physics

1. Lecturer and notes

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All teaching notes and example sheets with solutions will be available at our School Teaching Web (**http://teachweb.ph.man.ac.uk**) and my personal web page (**http://www.theory.physics.manchester.ac.uk/~xian**), in additional to **Blackboard**. Please check these pages regularly as changes will be made and new materials (such as solutions to examples) will be added.

I will appreciate if you find any mistake in the online materials and inform me by email. You are also welcome to ask questions on this course by email.

2. Reference Books

- **a.** F. Mandl, *Statistical Physics*, second edition (Wiley)
- **b.** R. Bowley and M. Sanchez, *Introductory Statistical Mechanics*, second edition (Oxford)
- **c.** M.W. Zemansky and R.H. Dittman, *Heat and Thermodynamics*, 7th edition (McGraw-Hill)

3. Assessment

- **a.** Tutorial work (11 sheets) and attendance 5%
- **b.** 1 hour 30 minutes examination in May/June 95%

4. Aims

To develop the ideas of classical thermodynamics

To deepen the appreciation of the link between the microscopic properties of individual atoms or other particles and the macroscopic properties of many-body systems formed from them

To demonstrate the power of statistical method in physics

5. Outline

- **a.** 1st law of thermodynamics (4 lectures)
- **b.** 2nd law (8 lectures)
- **c.** The statistical theory of thermodynamics (3 lectures)
- **d.** Statistical physics of non-isolated systems (8 lectures)

Please note one lecture short due to a bank holiday Monday.