PHYS4031 Statistical Mechanics

Learning Outcomes

1.	To appreciate the connection between statistical mechanics and thermodynamics and to realize that many results in statistical physics come from the same fundamental postulate.
2.	To understand the ensemble theories in statistical mechanics.
3.	To carry out calculations of thermodynamic properties for typical (mostly non-interacting) physical systems using ensemble theories.
4.	To make connections to concepts acquired in other physics courses, e.g. thermodynamics, quantum mechanics, solid state physics and astrophysics.
5.	To apply statistical mechanics to ideal Fermi gas and ideal Bose gas, and to relate results to physical problems.
6.	To acquire and apply mathematical skills related to counting, Stirling's formula, Gaussian integrals, summations, method of Lagrange multipliers, and integrals involving Fermi-Dirac and Bose-Einstein distributions.
7.	To acquire the basic principles for further studies on the statistical mechanics of interesting systems.