

Statistical Thermodynamic, PHYS 5113

Instructor: Alexander Khanov

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Course website: <http://hep0.okstate.edu/khanov/phys5113.html>

Time and location: MWF 8:30–9:20 am, PS 112

Textbook: *Thermodynamics and Introduction to Thermostatistics*, Herbert B. Callen, 2nd edition (John Wiley & sons, 1985), ISBN-10: 0471862568

Exams: Midterm I, Midterm II, Final

Grading: homework 30%, Midterm I 20%, Midterm II 20%, Final 30%

Grading scale: A=(85-100), B=(70-84), C=(55-69), D=(40-54), F=(0-39)

Outline of topics (tentative, as time permits):

- * Basic concepts in thermodynamics
- * Equilibrium conditions
- * Model applications
- * Reversible processes and maximum work theorem
- * Legendre transformation method
- * Maxwell relations
- * Stability of thermodynamics systems
- * First and second order phase transitions
- * Statistical mechanics in the microcanonical formalism
- * The canonical formalism and Helmholtz representation
- * Entropy
- * Quantum fluids