Physics 410
Thermal and Statistical Physics
Spring 2010

Lecture: 4:10 - 5:00 pm M W F BPS 1415

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Course textbook: "Thermal Physics" by Kittel and Kroemer, 2nd edition

W.H. Freeman and Company

On reserve:

"Fundamentals of Statistical and Thermal Physics" by Frederick Reif

McGraw-Hill Publishers

“Thermal Physics” by Daniel V. Schroeder, Addison Wesley Longman

Homework, Quizzes, Examination, and Grading Procedure

Homework

Homework (HW) and reading assignments will be given at the beginning of each week. All assigned HW problems will be posted on the Phy 410 home page (www.pa.msu.edu/~mahanti/PHY410/). HW will be due at the beginning of the class on Monday of each week. In case the due date falls on a holiday, HW will be due the next class day. **No late HW will be accepted.**

Quizes

There will be roughly one in-class quiz per week. The quizzes will be open book and open notes.

Examination

There will be two hourly examinations and one final exam. The two hourly exams will be given in the class. They are on **Feb 19** and **April 2**. The final examination will be on **Wednesday, May 5 from 5:45-7:45 pm**. The place will be announced later.

All the exams will be closed books and closed notes. You will be expected to remember the important equations and how to use them in solving problems.

Grading Procedure

Your final grade will be determined as follows:

Homework	20%
Quizzes	10%
Each hourly exam	20%
Final Exam	30%

Tentative Schedule

Week	Month	M	W	F	Ch	Subject
1	Jan	11	13	15	1	Multiplicity, States of a model binary system
2	Jan	MLK	20	22	1,2	Binary magnetic system, Ensembles, Entropy
3	Jan	25	27	29	2,3	Temperature, Laws of Thermodynamics, Boltzmann factor
4	Feb	1	3	5	3	Partition function, Helmholtz free energy, Pressure, Ideal gas
5	Feb	8	10	12	3,4	More examples, Thermal radiation, Planck distribution,
6	Feb	15	17	EX1	4	Stephan-Boltzmann law, Electrical noise
7	Feb	22	24	26	4,5	Phonons in solids, Einstein and Debye model
8	Mar	1	3	5	5	Chemical Potential, Gibbs factor and Gibbs sum
9	Mar	8	10	12		SPRING BREAK
10	Mar	15	17	19	6	Gibbs sum, FD and BE distribution function, Classical limit
11	Mar	22	24	26	6,7	Classical gas, Fermi gas
12	Mar/Apr	29	31	EX2	7	Fermi gas, Bose gas
13	Apr	5	7	9	7,8	Bose gas, Energy & Entropy transfer
14	Apr	12	14	16	8,9	Heat and Work, Irreversibility, Gibbs free energy
15	Apr	19	21	23	9,10	Equilibrium in reactions, Phase transitions
16	Apr/May	26	28	30	10	Phase transitions, Review

FINAL EXAMINATION: Wednesday, May 5, 5:45-7:45 pm
Color codes: EX1 will cover topics in blue and EX2 will cover topics in green. Final Exam will have 60% from brown, 20% each from blue and green