PHYSICS 415
Fall 1997

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2:25 MWF
3335 Sterling

Text: Kittel & Kromer: **Thermal Physics,** 2nd ed.

Sep. 3, 5	Thermodynamic Concepts
Sep. 8	Review of Probability
Sep. 10, 12	Ch. 1: Enumeration of States of a Model System
Sep.15, 17, 19	Ch. 2: Entropy and Temperature
Sep. 22, 24, 26	Ch. 3: Bolzmann Distribution & Helmholtz Free Energy
Oct. 3	**EXAM I**
Sep. 29, Oct. 1, 6	Ch. 4: Thermal Radiation and Planck Distribution
Oct. 8, 10, 13	Ch. 5: Chemical Potential and Gibbs Distribution
Oct. 15, 17, 20	Ch. 6: Ideal Gas
Oct. 22, 24, 27	Ch. 7: Fermi and Bose Gases
Nov. 3	**EXAM 2**
Oct. 29, 31	Ch. 8: Heat and Work
Nov. 5, 7	Ch. 9: Gibbs Free Energy and Chemical Reactions
Nov. 10, 12, 14	Ch. 10: Phase Transformations
Nov. 17, 19, 21	Ch. 11: Binary Mixtures
Dec. 3	**EXAM 3**
Nov. 24, 26, Dec. 1, 5	Ch. 14: Kinetic Theory
Dec. 8, 10, 12	Ch. 13: Semiconductor Statistics
Dec. 14	**FINAL** (7:45am)

Homework problems: are due at the beginning of lecture following the one in which they are assigned. This schedule is flexible; see me ahead of time whenever you are going to have a problem with it.

Grading: is based on average of exams. Final counts two hour exams. Will drop lowest of hour exams or 1/2 weight of Final. General level of effort (0-5) on homework problems will count + or −1/2 grade. (Good try at $\geq 2/3$ of problems $\Rightarrow +1/2$, $\leq 1/3 \Rightarrow -1/2$.) Working together is encouraged, but write up your own solutions.

September 1997

Physics 415

REFERENCES

	Reserve	Circulating
1. Reif, "Fundamentals of Statistical and Thermal Physics"	Physics	Physics, Chem

Mostly statistical mechanics. Well-organized. Very complete derivations with all the steps. An excellent all-around reference. Uses $\beta = 1/kT$.

2. Mandl, "Statistical Physics" (1st edition)	Physics	Physics, Wendt

Similar organization to Kittel & Kroemer. More careful and complete derivations, given in more detail. Uses conventional T, S.

3. Mandl, "Statistical Physics" (2nd edition)		Physics, College

I haven't checked out the new edition yet, but it's probably good, based on the first.

All statistics textbooks have much more complicated probability theory than we need. The following ones contain resonable introductory material, but don't go overboard on reading a lot of any of them:

4. Ross, "A First Course in Probability" (3rd ed)	Math, Wendt, Physics	

Chapters 1 & 2 have a decent introduction to basic probability.

5. Meyer, "Introductory Probability & Statistical Applications"	Math	Math, Wendt
6. Ross, "Introduction to Probability & Statistics for Engineers"	Wendt	Math