Physics 214B–Winter 98

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Office hours:	anytime
Book:	Pathria; Statistical Mechanics, second edition
Assignments and Grades:	Problems of varying length and difficulty will be assigned regularly and posted on http://www.physics.uci.edu/∼mbander. Your grade will be based on performance on these. There will be no separate final or midterm examinations.

Outline of 214B

Transport Phenomena and Fluctuations:

- Simple treatment of conductivities and thermoelectric effects.
- Kubo Formalism, Onsager relations.
- Fluctuation-Dissipation theorem.

Existence of the thermodynamic limit for various ensembles:

- Equivalence of the various ensembles and the Maxwell construction.
- Phase transitions and Lee-Yang zeros.

Critical Phenomena:

- Mean Field Theories.
- Critical exponents.
- Critical fluctuations and critical exponent inequalities.
- Scaling hypothesis and critical exponent relations.
- Real space renormalization group.

Existence/nonexistence of spontaneous magnetization (if time permits):

- Non existence of spontaneous magnetization in two dimensions.
- Brief discussion of the X-Y model.
- Existence of spontaneous magnetization in three dimensions.