ME516 Statistical Mechanics MW 12-2 ENG 202

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Recommended Books:

1-Introduction to Modern Statistical Mechanics by David Chandler

2-Statistical Mechanics: Entropy, Order Parameters, and Complexity by James P. Sethna (This book can be downloaded for free at http://www.lassp.cornell.edu/sethna/)

3-Fundamentals of Statistical and Thermal Physics by F. Reif.

All the books have been placed on the BU Science Library reserve.

SYLLABUS FOR SPRING 2010*

WEEK	DATES	TOPIC	HOMEWORK
		Introduction	
1	1/13	Random Walk	
		Diffusion Equation	
2	1/20	Probability and Statistics	
3	1/25-1/27	Probability and Statistics	
4	2/1-2/3	Review of Thermodynamics	
		First Law	
		Second Law	
		Thermal Equilibrium and Temperature	
		Free Energies	
		Stability and Equilibrium	
		Applications	
5	2/8-2/10	Introduction to Statistical Mechanics	
		Phase Space Dynamics	
6	2/16-2/17	Ensembles and Averages	
		Ideal (Noninteracting) Systems	
		Photon Gas	
		Flootnon Gas	
7	2/22-2/24	Classical Cases	
8	3/1-3/3	Classical Eluide	
		Averages and Space Correlation Functions	
		Thermodynamic Properties	
		Thermodynamic Troperties	
9	3/15-3/17	Midterm	
10	3/22-3/24	Classical Transport	
10	3/22-3/24	Elementary Kinetic Theory of Transport	
11	3/29-3/31	Boltzmann Equation	
		Relaxation Time Approximation	
		Examples	
12	4/5-4/7	Introduction to Non-equilibrium Phenomena	
		Onsager Hypothesis	
		Correlation Functions	
13	4/12-4/14	Flucutation-Dissipation Theorem	
14	4/21-4/22	Noise	
15	4/26-4/28	Review	

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*Subject to change

Policies:

- 1-Late HWs are not accepted.
- 2-There is a midterm and a final.
- 3-Final Grade=20% HW+35% Midterm 1+45% Final