

Chem. 117/217A Fall 2009

Lecture: TR 11:00 AM – 12:15 PM
1108 Girvetz

Instructor: Prof. Steve Buratto
4148B Chemistry
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Office Hours: MT 9:00 - 10:00 AM; F 11:00 AM - noon (or by appointment)

Recommended Textbooks:

“Molecular Driving Forces” 1st Edition by, Ken A. Dill & Sarina Bromberg

“Introduction to Modern Statistical Mechanics” 1st Edition by, David Chandler

“Physical Chemistry: Statistical Mechanics” 1st Edition by, Horia Metiu

“Statistical Mechanics” any edition by, Donald McQuarrie

Topics Covered: Probability and Multiplicity, Distribution Functions, Entropy and Probability, Canonical Partition Function, Statistical Thermodynamics, Ensembles, Fermi-Dirac, Bose-Einstein and Boltzmann Statistics, Fluctuations, Ideal Gases, Chemical Equilibrium, and Transition State Theory.

Homework: There will be a problem set due every Thurs. in class except for exam weeks. Problem sets assigned on Tues. and will be due the following Thurs. before class. No late homework will be accepted. The solutions to the problem sets and exams will be posted after the due date.

Grading: Your grade will be determined as follows: attendance (10%), problem sets (25%), exam (25%), final exam (40%).

Exam: TBD

Final Exam: Take-home exam during finals week.

Statistical Mechanics

“Statistical Mechanics is the discipline concerned with interpreting the measurable properties (T, p, V) of materials in terms of the properties and interactions of the constituent atoms and molecules.”

Harold L. Friedman in *A Course in Statistical Mechanics*

“The premise of Statistical Mechanics is simple: the motion of the molecules in a material determines its macroscopic properties.”

Horia Metiu in *Physical Chemistry: Statistical Mechanics*

“Statistical Mechanics is the theory with which we analyze the behavior of natural or spontaneous fluctuations.”

David Chandler in *Introduction to Modern Statistical Mechanics*

We will use all of these descriptions in our development of Statistical Mechanics.