CHE 251 PHYSICAL CHEMISTRY I

Total Credit: Three
Lecture: Professor Amar Nath, amar.nath@drexel.edu 12-605, phone (215) 895-2648

The syllabus is attached herewith. You have already been exposed to some of the material in your Freshman courses. Please note that the emphasis here will be on underlying physical concepts unlike your earlier courses. The exams would be based on lectures. If you miss any lecture, please review the material with one of your classmates who has taken good lecture notes. Some of the material discussed in the lectures may not be found in your textbook, namely "Physical Chemistry by Laidler/Meisser/Sanctuary". At times, I will refer to a specific physical chemistry book(s) on reserve in the library, which best cover the material discussed in the class. Lecture material will normally be from several sources, and so taking notes may be advantageous. You are welcome to ask me during or after the lecture about the source(s) for the material covered.

There will be two written exams, the first one in the fifth week. These two exams would count for 80% of the grade. For each written exam a 90 min. period will be allotted. The questions in these exams would be based on underlying physical principles. You will do well if you can demonstrate a good understanding of the basic concepts. About 20% of the questions would be of a numerical nature and based on home-assignments.

Home assignments would be graded every week and would count for 10% of your grade. Presentations during the last week of classes will count for another 10%.

There are several books on reserve in the library; you can access the list on our computer. Books authored by Mahan, Nash, Pimental/Spratley and Brian Smith are particularly readable and have very clear presentations.

You are encouraged to participate actively in classroom discussions. In case of students scoring borderline grades, special consideration would be given to this participation.

You would be assigned homework every Monday and it will be due on the following Monday. Latesubmission will not be acceptable.
Behavior of Gases:

First and Second Law of Thermodynamics:

Chemical Equilibrium:
Free energy and equilibrium. Chemical equilibrium in gases, solutions, and heterogeneous systems. Activity coefficients. Temperature and pressure dependence of equilibrium constants.

Phase Equilibrium:

Nature of Electrolytes:

Equilibrium Electrochemistry:

Colligative Properties:
Lowering of Vapor Pressure, Boiling Point, and Elevation of freezing point by addition of solutes, and Osmotic Pressure.

Supplementary Text-book: Mahan "Elementary Chemical Thermodynamics"