Course: Chemistry 311: **PHYSICAL CHEMISTRY** Fall 2003

Text Book: *Physical Chemistry*, Fourth Edition, K.J. Laidler, J.H. Meiser, and B.C. Sanctury

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Grading Policy: The letter grade for the course will be based on the following:

1. Three examinations given during class periods. The average score of these will account for 75% of the total score for the course. You are expected to make every effort to take the examinations at the time they are given. An alternate time may be arranged only for "legitimate" reasons, or excused absences.
2. Graded homework assignments. Homework problems will be assigned every Monday. They are due the following Monday at the end of the lecture. You will work in groups and turn in one completed assignment per group. However, each of you must also submit completed outlines for the assigned problems. The outlines will not be returned until the end of the quarter. Each member of the group will receive the same score for homework. I will drop your lowest homework score from consideration. The average of the remainder will account for 25% of the total score for the course if your average exam score is ≥ 60%.
3. The following grading scale will be used for determining the letter grade from the final weighted average:

   Guaranteed floors for letter grades:
   ≥ 92% = A, ≥ 80 = B, ≥ 70 = C, ≥ 60 = D, < 60 = F.

   Gray area:
   The letter grade for those who fall in the gray area between the passing letter grades (89-91 = A/B, 76-79 = B/C, 65-69 = C/D) will be determined by taking into account the following factors: upward trend in exam scores, class participation, quality of homework outlines, and attendance.
4. The determination of the "gray area" letter grades will be the prerogative of the instructor and may involve subjective evaluations of factors such as class participation and quality of homework outlines.

Last day to drop with a W is Friday, October 24, 2003

Attendance Policy: Louisiana Tech has adopted class attendance regulations in agreement with the University of Louisiana System. The Minimum Class Attendance Regulations are given on p. 11 of the 2003-2004 Louisiana Tech University Bulletin. Both you and I are expected to adhere to these regulations. Attendance will be taken at the beginning of each class. If you are late, you will be marked absent for that day.

If you are on any kind of financial assistance from the University, I am required to report your attendance record when requested. Poor class attendance could have an impact on the continuation of your financial assistance.

Course Syllabus:

Chapter 1: **Nature of Physical Chemistry and Kinetic Theory of Gases**
Chapter 2: **The First Law of Thermodynamics**

Examination 1: Friday, September 26

Chapter 3: **The Second Law of Thermodynamics**
Chapter 4: **Chemical Equilibrium**

Examination 2: Friday, October 24

Chapter 5: **Phases and Solutions**
Chapter 6: **Phase Equilibria**
Chapters 7 & 8: **Electrolyates & Electrochemical Cells**

Examination 3: Monday, November 17

Physical Chemistry is like a contact sport. You have to get into it to know what it is all about. The best way to learn Physical Chemistry appears to be to work many problems that illustrate the applications of various principles in different contexts.

I will assign problems for you to work from each Chapter. You do not have to turn these in for grading but you are very strongly encouraged to work them out in order to enhance your understanding of the subject.

Complete solutions to the assigned problems will be posted on the course web page (accessible from my home page http://www.chem.latech.edu/~ramu). We will work several of these in class to illustrate various principles. However, the ultimate responsibility for understanding the subject matter rests upon you.

Goals of the course:
To provide an introduction to the use of physical concepts in the study of chemical systems.

Prerequisites by topic:
General Chemistry, Organic Chemistry, Differential and Integral Calculus, General Physics.

What I expect you to know:

1. I expect you to have a reasonably firm grasp of the concepts you learned in Freshman Chemistry, such as stoichiometry, unit conversions, basic thermochemistry, and thermodynamic concepts such as enthalpy, entropy and free energy. DO NOT HESITATE TO REFER TO YOUR GENERAL CHEMISTRY TEXTBOOKS IF NECESSARY. SEVERAL GENERAL CHEMISTRY TEXTBOOKS ARE AVAILABLE IN THE LIBRARY.
2. I expect you to know basic definitions (in terms of the fundamental quantities length, mass and time) of physical concepts such as velocity, acceleration, force, work and energy.
3. I expect you to know the equation for a straight line and the meaning of each term in that equation.
4. I expect you to know how to solve a quadratic such as $ax^2 + bx + c = 0$.
5. I expect you to be able to differentiate (with respect to a variabe, say, x), simple functions such as x^n (n = any number, positive or negative, not necessarily an integer), ln u, trigonometric functions of u and expoentials such as e^{-u}, where $u = u(x)$.
6. I expect you to be able to integrate (with respect to a variabe, say, x), simple functions such as x^n (n = any number, positive or negative, not necessarily an integer), trigonometric functions of u and expoentials such as e^{-u}, where $u = u(x)$, both as indefinite (no limits) and definite (apply limits after integration) integrals.

What I expect you to do:

1. I expect you to come to class regularly, keep up with the lectures (which may deviate from the text book occasionally) and ask pertinent questions often and without hesitation.
2. I expect that you will not talk to your neighbors during the lecture except during group activities. If you do not wish to remain in the class, you may leave quietly. If you are unable to concentrate, you may read something or take a nap (as long as you don't snore).
3. I expect you to make a genuine effort to answer the questions and solve the problems assigned in class before coming to get help. When I ask you to show me how far you managed to get with a question, *I expect to see your work*.
4. If you are having difficulties in this class, I expect you to maintain a dialog with me about your difficulties and how we may overcome the problem.