

**COURSE PLAN OF CHEM3030L  
PHYSICAL CHEMISTRY LABORATORY  
Fall Semester, 2009  
Xavier University of Louisiana**

**Class Specs:** 1 sh, Classroom 36-310, Class hours: Wednesday 2:00-4:50 pm.  
**Instructors:** Dr. Jian Zhang: Office, 37-340; Phone x7372; [jzhang@xula.edu](mailto:jzhang@xula.edu).  
Office Hours: MR 9:00-11:00am, T 11:00-12:00am, W 1:00-2:00pm.

### **Course Description**

A selection of experiments featuring the applications of principles of physical chemistry. Experiments include the use of physical chemistry techniques to examine the properties of solids, liquids and gases, and the study of reaction kinetics. The course requires extensive computational and writing skills. Prerequisite, CHEM3210/3210LB; Co-requisite, CHEM3010/ 3030.

### **Texts and Other Materials**

1. "Experiments in Physical Chemistry," D.P. Shoemaker, C.W. Garland, and J.W. Nibler, 7<sup>th</sup> Edition, The McGraw-Hill Companies, Inc. 2003. One copy is on reserve in the library.
2. Jian Zhang, "Physical Chemistry Laboratory Manual for Chem3030LB", 10<sup>th</sup> edition Xavier University of Louisiana, 2007
3. Laboratory Notebook, Xavier University Chemistry Department
4. Safety glasses, and lab coat.

### **Course Objectives**

Upon the successful completion of this course the student should be able to

1. apply physical chemistry principles to practical laboratory experiments,
2. perform accurate and quantitative measurements,
3. analyze data statistically and assess reliability of results.
4. interpret experimental results and draw reasonable conclusions.
5. communicate effectively through oral and written reports.

### **Course Requirements**

1. A student is required to attend the scheduled lab on time, and to stay until all data have been collected.
2. The make-up lab due to legitimate absences will be handled on an individual basis.
3. All students are required to keep a lab notebook for recording data in duplicate. Students should prepare the notebook with title, date, objective(s), brief procedure and a preliminary table for data entry in advance, which will be initialed by the instructor before the experiment starts, and turned in at the end of lab. All data must be recorded directly into the lab notebook.
4. A pre-lab exercises sheet will be distributed one week before experiment, and must be turned in at the beginning of the class. *No late pre-lab exercises are accepted.*
5. A lab report must be written for each experiment, following the format given in the manual. *The report must be the original. Only the hard copy is accepted. The xerox copy of any part of the report is not accepted.* All reports are due one week after the completion of the respective experiments unless announced in advance. *Early reports will be credited at the rate of 2 points per workday. Late reports will be penalized at the rate of 2 points per workday. The late reports over 3 weeks passed due date will not be accepted for grading.*
6. *Copying any part of the report will be considered cheating. Also, copying the textbook or any other sources in writing reports is plagiarism, which will also be considered cheating.*

*All reports will be heavily and carefully scrutinized for illicit cooperation or undue dependence on primary sources. In cases where such is detected, all students involved will receive a grade of zero for the report.*

7. Students who do not cooperate by cleaning up equipment and working area, or observing safety requirements (e.g. wearing safety glasses at all times) will be penalized at a rate of 2 points for each violation.

8. An oral presentation on an experiment assigned by the instructor is required. A comprehensive final examination will be given at the end of the semester.

### **Course Evaluation**

The course work consists of a computer project (30pts), six labs (70 pts for each lab: 10 pts for prelab exercises, 10 pts for notebook, and 50 pts for lab report), an oral report (50 pts), and the final exam (100 pts).

The midterm grade is based on the computer project and the first three lab work.

The course grade is based on all course work.

The letter grades will be assigned according to the following: A, >86%; B, 76-85%; C, 65-75%; D 50-64%; F <50.

### **Evacuation Policy**

In the event that classes are cancelled due to hurricane evacuation, assignments and other course materials will be posted on the Blackboard.

### **Schedule:**

Due to the limitation of equipment, two experiments will be going on in each lab period. The detailed schedule for each student will be posted in the lab.

Date	Activities	Experiment Titles
8/26	Introduction	
9/2	Lecture I: Chemical and phase equilibrium	Computer project
9/9	Lab 1.	Exp 1. Chemical equilibrium in solution
9/16	Lab 2.	Exp 2. Vapor pressure of a pure liquid
9/23	Lecture II: Thermodynamics	
9/30	Lab 3.	Exp 3. Bomb calorimetry
10/7	Lab 4.	Exp 4. Heat capacity ratio of gases
10/14	Lecture III: Electrochemistry and kinetics	
10/21	Lab 5.	Exp 5. Conductance of solutions
10/28	Lab 6.	Exp 6. Iodine clock reaction
11/4	Review and making up lab	
11/11	Oral presentation	
11/18	Oral presentation	
11/25	Thanksgiving Holidays	
12/2	Final Examination	

