

# CHEM 356 - PHYSICAL CHEMISTRY LABORATORY

## SPRING TERM, 2008

Instructor: Ed Thorne  
Office: Disque Hall, Room 316  
(215) 895-1331  
Email: thorneej@drexel.edu  
Office Hours: One hour before class each week or by appointment

**NOTE: THIS COURSE IS OPEN TO CHEMICAL ENGINEERING MAJORS ONLY. ALL OTHER MAJORS MUST SCHEDULE EITHER CHEM 357 AND/OR CHEM 358**

### **A. COURSE OBJECTIVE**

This course is designed to perform, analyze, and describe in writing quantitative physical measurements on chemical systems that illustrate the principles of physical chemistry. In this course, emphasis is placed on experiments in phase equilibrium, chemical kinetics, spectroscopy, and transport properties.

### **B. PREREQUISITES**      CHE 202

### **C. COURSE MATERIALS**

Required Textbook: Experimental Physical Chemistry: A Laboratory Textbook, Third Edition by Arthur M. Halpern and George C. McBane, Freeman (2006)

NOTE: Earlier editions of this textbook are equally acceptable

Safety glasses or goggles

### **D. TIME, LOCATION, AND ATTENDANCE POLICY**

The class will meet on Tuesday Evenings from 6:00 to 9:50 in Room 12-404. Because this is a laboratory course and not solely a lecture course, attendance is mandatory to receive a passing grade. Each missed class will result in a five point reduction of the FINAL COURSE GRADE (essentially, that is a one-half letter grade reduction). Any student missing two or more experiments will not receive a passing grade. There are no make-up lab sessions.

### **E. LABORATORY REPORTS**

A laboratory report is to be submitted for each experiment that is performed. The report is due at the beginning of the lab period one week after the experiment is completed and a fifteen point penalty will be assessed for each week (or fraction) the report is late. Each student must write their own report for each experiment performed and submit them separately from their lab partners. Identical reports will not be accepted; each student must demonstrate their own skill and experience. Final laboratory reports are to be handed in one week after you have completed the experiment. If you miss an experiment and your partner(s) perform it alone, you will not be permitted to submit a lab report for your partner's data. Each student must perform each of the experiments and submit a laboratory report for each one to receive a passing grade in the course.

### **F. ACADEMIC HONESTY POLICY**

Drexel University is committed to a learning environment that embraces academic honesty. In order to protect members of our community from results of dishonest conduct, the University has adopted policies to deal with cases of academic dishonesty. Please read, understand, and follow the "Academic Honesty Policy" as written in the official student handbook. Cheating takes the form of turning in other people's reports. Each student is required to write his/her own lab report: duplicate copies (or very similar) lab reports from members of a group will not be accepted. Any instances of cheating will result in a failure for the course and there are absolutely no exceptions to this rule. For anyone who turns in a report that is essentially a slight rewrite of someone else's report, all people involved will receive a failure for the course.

### **G. GRADE BREAKDOWN**

Your grade for the course will be determined by three factors: your written lab reports, an evaluation, and your grade on a final exam. The evaluation will be based on your attendance (including showing up on time), preparation for lab work, laboratory safety (wearing safety glasses, etc.) and your working in the lab. The contribution of the individual factors is:

Average of lab reports	70% of grade
Evaluation	15% of grade
Final Exam	15% of grade

There is also an exercise on statistical treatment of data based upon a lecture given on the first night and it will carry the same weight as a lab report. The evaluation will be based on your attendance (including showing up on time), preparation for lab work, laboratory safety (wearing safety glasses, etc.) and your work in the lab.

## **H. SPECIAL NOTES**

1. In order to be able to do the experiment within three hours and to understand both the procedure and the underlying theory, it is essential that you read over the experiment before coming to the lecture-discussion. Don't even think of coming to class unless you have prepared for the experiment. If it becomes evident that there is little or no preparation for the experiments, we may resort to giving a pre-laboratory quiz covering the highlights of the experiments, which would then be factored in as part of your evaluation grade.
2. The information in the handouts is a general overview and may be changed at the discretion of the instructor.
3. ALL GRADUATING SENIORS ARE RESPONSIBLE FOR ALL EXPERIMENTS, REPORTS, AND ASSIGNMENTS.

**CHEM 356 LABORATORY EXPERIMENT SCHEDULE**  
**SPRING TERM, 2008**

<u>WEEK</u>	<u>DATE</u>	<u>EXPERIMENT NAME</u>	<u>PAGES</u>
1	April 1	Course Requirements/Statistics & Data Treatment	Chapter 1 Handouts
2	April 8	Experiment #17 - Viscosity of Liquids	17-1 to 17-7
3	April 15	Discussion of Viscosity of Liquids Report Submit a draft of your lab report 20 point penalty if no lab report draft is submitted	
4	April 22	Spectrometric Determination of pK of Thymol Blue Parts I and II	Handout
5	April 29	Spectrometric Determination of pK of Thymol Blue Part III	Handout
6	May 6	Experiment #10 - Mutual Solubility of Liquids	10-1 to 10-9
7	May 13	Experiment #13 - Solid-Liquid Equilibrium	13-1 to 13-10
8	May 20	Experiment #21 - Kinetics of Reaction in Solution Real Time Analysis, Part I	20-1 to 20-14
9	May 27	Experiment #21 - Kinetics of Reaction in Solution Real Time Analysis, Part II	20-1 to 20-14
10	June 3	TO BE DETERMINED	
11	June 10	FINAL EXAM - ROOM LOCATION TO BE DETERMINED	