TEXT & REQUIRED MATERIALS

The *USCA Physical Chemistry Lab Manual* is required and may be purchased in the bookstore. Not only are lab exercises included, but so are help sheets, data analysis routines and instrument guides. Reference material such as old PChem texts and instrument manuals are available in the lab and can be checked out if necessary or read during appropriate times during lab or through the week. Reference handbooks are available in lab only.

As junior chemistry majors, the resources of SBDG 315 & 319 are available to you. You will have access, except between the hours of 11PM and 6AM, to those computers, printers, etc. to prepare for lab work or finish lab reports. (The PacerPrint Program is in place.) This is especially important as *Mathcad* develops into a tool you want to use. The use of these facilities is subject to the guidelines posted in SBDG 315 and you will lose your late access privileges if these guidelines are not followed. **No actual lab bench work is to be done outside of official lab hours without authorization.**

A lab notebook with copy sheets, long pants, shoes, and your calculator are required items as well.

CONTENT

You must review the specific information for each experiment before coming to lab. All lab reports due during the semester will be generated on computer. I assume that word processing and spreadsheet manipulation are skills most of you have already. If not please let me know. The campus supports Microsoft WORD and EXCEL and I can provide some assistance with them. Your own software is fine but I may not be able to help. I have a spreadsheet exercise that you can try if your skills in that area are not too strong. As the semester proceeds and Mathcad becomes a comfortable tool for you, please feel free to work with it for your lab reports. Software called *Graphical Analysis*, which is used with CBL, is available and is a straightforward graphing package. I recommend it for routine graphing needs in lab and for homework.

The semester’s labs will consist of a series of experiments conducted in small groups and centered on one technique or apparatus. These experiments are designed to illustrate fundamental aspects of physical chemistry and to correlate to lecture. Only the lab data is to be shared. Collaboration on the report is not acceptable.

Required information for the day’s experiment including questions and data work-up criteria are to be studied prior to actual lab time. The first hour or so of each lab will be an introduction to the equipment, instruments, and procedures for that experiment. The remainder of the lab period will be spent taking data, analyzing the data, and preparing the work on the computer. Lab reports are due at the beginning of the lab period that immediately follows completion of the lab work unless an exam is scheduled. Then it is due the following period. Guidelines for the formal written reports and their grading schemes are distributed as part of the lab manual. All reports must have the carbon copy of the lab notebook pages attached as an appendix. A 25% point penalty will be strictly applied to all reports that come in up to one week late. Reports that are more than one week late will acquire a 50% penalty. Students have failed lab by not turning in reports sufficiently on time to get over the “C” line. Please do not let your poor time management skills result in you repeating PChem lab. It is a waste of everyone’s time and money.

Proper chemical handling is a very important part of this or any lab. Consult the academic lab safety handbook for specifics. All chemical materials and equipment that are not part of the regular lab room will be brought in on a cart or in a large tub. All materials and equipment must be returned there at the end of the lab period. This includes any labeled waste that is generated. The lab must be cleaned before any student may leave the lab. Please arrange to share the cleaning duties or I will assign the duties for each lab.

Formal lab reports must be complete and follow the guidelines. Correct grammar is very important and so you should consult the *St. Martin’s Handbook* as needed. Routine problems in grammar on a submitted final report indicate a lack of attention to detail. Each report must contain two abstracts from any
ACS web journal on a topic related to the experiment. An example formal report can be found in the text *Survival Guide for Physical Chemistry* by Michelle Francl. The quick lab reports consist of the answers to a list of questions that are at end of each lab in the manual, the notebook pages and two abstracts.

The point distribution for the lab course is shown below. The grade received will be based on the percentage of points received relative to the total points possible. The guideline for grades in the lab is 90% or above is an "A", 80% - 89% is a "B", 70% - 79% is a "C", etc. I grade each report with the idea that there will be a usual number of errors in grammar, writing, comprehension and understanding, etc. A typical conscientious approach will earn between 85 – 89% of the points. Extra care towards the writing and concern about the science and the completeness of thought and logic will earn more points. A casual approach and lack of concern will result in fewer points. Lab reports that do not meet a minimum level of critical examination by me will be returned with comments but without a grade. Such reports are to be rewritten and returned by the Friday of that same week if no penalty is to be imposed. Our guide for written scientific presentation will be the *ACS Style Guide*, 2nd Edition, edited by Janet Dodd. If you have any questions, please refer to this book. It can be purchased on line from ACS and is a great investment for your later careers.

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<th>Lab Reports</th>
<th>4 Quick @ 20 pts</th>
<th>80 pts</th>
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<td>2 Formal @ 50 pts</td>
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NOTE: Any student who has a physical, psychological, and/or learning disability that might affect your performance in the class needs to contact the Office of Disability Services (126A B&E, 803/641-3609) on campus as soon as possible. That office will determine appropriate accommodations based on medical documentation. Thanks.

**PHYSICAL CHEMISTRY LAB TENTATIVE SCHEDULE – FALL 2008**

8/21       Introduction, Syllabus, Introduction to Calorimetry
8/28       Oxygen Bomb Calorimetry and Solution/Dissolution Calorimetry
9/4
9/11
9/18       **LECTURE EXAM I**
9/25       Measuring the Equilibrium Constant for Ferrothiocyanate Formation  
            Formal Report – Due 10/8/08
10/2       Adsorption Equilibrium: Methylene Blue onto Silica Gel
10/16      **LECTURE EXAM II**
10/23      The Hydrolysis of Ethyl Acetate at Equilibrium
10/30
11/6       **LECTURE EXAM III**
11/13      Rate Law for the Reduction of Ferric Ion with Iodide Using the Method of Initial Rates  
            Formal Report – Due 12/3/07
11/20
12/4       **LECTURE EXAM IV**