

Chemistry 436 — Fall 2003

Physical Chemistry Laboratory I

Instructor: Dr. John B. Miller Office Hours: by appointment  
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**Lab: 4414/4450 Haenicke, 387-2951**  
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Class: T 0800-1200, M<sup>c</sup>Cracken 4210 & 4250

Supplies: Safety Glasses and Laboratory Notebook *with carbons.*

Prerequisite: Chem 430.

Manual: Houser, Schreiber, Lowry, Miller, & Liu *Physical Chemistry Laboratory.*

Reserve Materials: Daniels, *et al.*, *Experimental Physical Chemistry*, 6<sup>th</sup> ed.  
Primary references

Assignments:

A statistical problem set will be due the second week of class.

You will perform five laboratory experiments:

**Required Experiments**

I-1 – Heat Capacity of Gases

I-4 – N<sub>2</sub>O<sub>4</sub> Dissociation

I-5 – Hydrolysis of Sucrose

**Selected Additional Experiment** [*Pick one from each pair*]

I-2a – Heat of Solution

I-2b – Heat of Combustion

I-3a – Liquid-Vapor Equilibrium

I-3b – Vapor Pressure of a Pure Liquid

Note that the laboratory manual will **not** be permitted inside the classroom. All relevant procedures and warnings must be written in the laboratory notebook **prior to** the laboratory session. This is to ensure that you understand the experiment before attempting to perform it. Carbon copies of data will be collected at the end of each laboratory period.

This is a writing intensive course, and is intended to satisfy the Baccalaureate-level writing requirement. Preparation for each experiment will include writing a brief and concise abstract of that experiment. After completion of the laboratory work, each experiment will be described in a full written report.

The abstract for each experiment should be about one page and consist of a brief synopsis of the experiment, including important theories, procedures, hazards and cautions relating to the experiment. This is an important part of the preparation for the laboratory. The abstract is due by 1700 the day before the experiment is to be performed. Abstracts will be graded overnight. Grading of the abstracts is primarily based on content (12 of 15 points), although grammar and style are considered.

The report for each experiment is due by 1700 one week after completion of that experiment. Reports should conform to the guidelines set forth in the laboratory manual, including: form, required information, style, and citation requirements.

The experimental reports and abstracts count for about 85% of the final grade. Of this amount, about 20% is based on experimental results (the accuracy of what is written), another 60% is based on critical thinking and interpretation (the rhetorical and expository content of the reports) and 20% is based on writing quality (style, grammar, spelling, and other mechanics). *Thus the writing quality and expository content of the experimental reports account for 64% (80% of 85%) of the final grade.* Laboratory reports will be graded and generally returned within one or two weeks. If a report is unacceptable, the student will be directed to The Writing Center for help with a rewrite, then both versions will be turned in (with no grading penalty).

Grading:

Statistical Problem set	1 @ 100 points
Experimental reports	5 @ 100 points
Prelab abstracts	5 @ 15 points

Late Work: Late statistical problem sets will be assessed a penalty of 10%. Problem sets more than one week late will **not** be accepted.

Late Experimental abstracts will be accepted but given a maximum of five points.

Late Experimental reports will be assessed a penalty of **10% per week**. Reports more than three weeks late will **not** be accepted.

Lab Rules: Safety Goggles or Safety Glasses (meeting ANSI Z87.1 standard) with side shields must be worn at all times in the laboratory.

Contact lenses are not permitted, even if worn with safety goggles.

Open-toed shoes are not permitted. Long pants are suggested. Loose, dangling clothing (scarves, ties, baggy sleeves, long necklaces) should be avoided. If clothing is deemed to be a safety hazard by the instructor, you will be required to change into appropriate attire.