

**CHM 3410L, Section 1**  
**Physical Chemistry I Laboratory**  
**Fall Semester 2003**

**Time and location:** M 9-12, CP 375

**Text:** *Experiments in Physical Chemistry*, 7<sup>th</sup> Ed., D.P. Shoemaker, C.W. Garland, and J.W. Nibler (McGraw-Hill: New York, 2002)

**Instructor:** Dr. Chatfield, CP 336, 305-348-3977, [chatfiel@fiu.edu](mailto:chatfiel@fiu.edu), [www.fiu.edu/~chatfiel](http://www.fiu.edu/~chatfiel), Office hours: M 3:00-4:00, W 2:00-4:00 or by appointment.

**Corequisites:** Physical Chemistry I (CHM 3410) and Quantitative Analysis (CHM 3120 and 3120L).

**Grading and Lab Reports:** The course grade will be based primarily (90%) on the lab reports, and to a smaller extent (10%) on laboratory notebooks. Three factors are important in the lab reports: completeness of the error analysis, quality of the discussion, and quality of the data. A sample lab report can be found in the text. A lab report should include all of the following sections: Abstract, Introduction, Methods, and Discussion. In the Methods section, there is no need to repeat a description in the text; it is sufficient to cite the text in a footnote. Each experiment in the text has sections entitled Calculations and Discussion. You should perform all calculations described in the Calculations section unless otherwise instructed. Your Discussion section should address (but not be limited to) all questions suggested in the text's Discussion section unless otherwise instructed. If you have questions regarding matters for calculation or discussion, see the instructor. You are encouraged to discuss the lab and perform calculations with your partner, but *all reports must be written independently*. Late reports will be subject to a reduction of one third of a letter grade for each day or fraction of a day they are late (weekends will count as one day).

The grading criteria for lab reports are:

- A Clear, complete, and correct results, error analysis, and answers to all Discussion questions; clarity in writing.
- B Minor errors in calculations and error analysis, confusion with some Discussion questions.
- C Major errors in calculations, incomplete error analysis, incomplete Discussion.
- D Confused approach, missing error analysis, missing or trivial Discussion.
- F Completely inadequate.

**Lab Notebooks:** Each student is expected to purchase a laboratory notebook, in which all data will be recorded. Loose leaf binders are not recommended, and loose sheets of paper are unacceptable. Lab notebooks will be inspected after the last lab and graded as acceptable (check) or deficient (check minus). Extended discussions and calculations are not expected in notebooks, but the data should be recorded clearly and completely. Students will not be permitted to begin work on the first experiment without a notebook.

**Experiments:** A total of five experiments will be performed. The first two prepare one for research in physical chemistry and are not experiments *per se*: (1) a problem set to introduce the kind of error analysis expected in laboratory reports, and (2) a literature search to be done in the library. The last three experiments will be performed in the laboratory. Two weeks are allowed for carrying out each of these, but usually only one will be needed. Reports are due by 5 P.M. one week after the last date assigned for a lab as per the table below. You may give reports to me in lab or have them stamped by the Department secretary and leave them in my mailbox in CP 304.

The overall schedule is shown below. In-lab experiments do not start until mid-October in order to allow you to cover concepts in the lecture class first. One class session will introduce the in-lab experiments (Oct. 6). You will be assigned to groups of two or three for these labs, and groups will rotate through them, so that each group will perform a different experiment on a given date. Two class sessions are set aside for each in-lab experiment. Usually one will be sufficient, but the second is available in less you need more time. The groups and schedule will be distributed and posted by Oct. 6.

Note: The introduction to error analysis on Sept. 8 and the introduction to literature searching on Sept. 22 will be held in computer labs on campus. We will meet in CP 375 and proceed to the labs together, leaving promptly at 9 A.M. Please be extra careful to be on time those days.

#### Schedule

Date	Experiment	Source	Due Date
9/1	Labor Day: No Lab		
9/8	Error Analysis	Ch. II + Handout	9/22
9/15	No lab		
9/22	Literature Search	Handout	10/6
9/29	No lab		
10/6	Intro. to Exps.		
10/13	Rotation #1	See below	10/27
10/20	--continue--		
10/27	Rotation #2	See below	11/10
11/3	--continue--		
11/10	Rotation #3	See below	11/24
11/17	--continue		

Rotations 1, 2, and 3 will each be one of the following experiments:

Heat Capacity Ratios of Gases (Schoemaker, Exp. 3)

Heats of Combustion (Schoemaker, Exp. 6)

Vapor Pressure of a Pure Liquid (Schoemaker, Exp. 13)