

CH385 Syllabus
Spring '2008

Textbook:

Your laboratory exercises were compiled and/or written by your instructor and will be given to you one week prior to your initial performance of that laboratory exercise. The text referenced in this course is "Experiments in Physical Chemistry", Shoemaker, Garland, Nibler, 6th Ed. It will be held in the Chemistry Office for your review.

Laboratory Notebook:

The style of your laboratory notebook is that encouraged in freshman chemistry. Leave the first few pages of your notebook blank to later contain a title page, comments and a table of contents. Each laboratory notebook page need contain a title and a date indicating content and day of entry. All records are made in ink. Mistakes are not eliminated; they are crossed out with a single line. Except when performing computational laboratories exercises, you should have written (1) a brief summary or introduction of the day's lab in your own words, (2) a list of necessary equipment, supplies and chemicals and (3) an outline of the procedure you plan to follow, *prior* to arriving in the laboratory. Each laboratory exercise should contain a well marked section for recording data and observations and a separate section for performing calculations using such data and observations. For computational labs, you need only follow the outline for these labs. You may find it useful to take notes in your laboratory notebook concerning the software.

Non-computational Reports:

See 'Sample Report' in referenced text, pp 13-24.

You are required to submit a *typed* report of each lab. Each report best consists of five components: title page/abstract, introduction, experimental method, results, discussion and references (if applicable). The title page should contain the name/number of the class, date, title of the experiment, your name, partner's name (if applicable). The abstract is part of the title page and should give a very brief overview of the results of your experiment. The introduction gives an overview of the experiment, in your own words. Herein, you briefly review the theory of interest, the pertinence of your experiment to that theory and what you hope to find from your data. The experimental method describes equipment, chemicals and experimental techniques employed. The results section is crucial and needs to be well organized. In this section you point to the relevant data (from your lab notebook, by page), bring together the results of your calculations (again referencing them from your lab notebook, by page) and answer any specific questions asked from the laboratory exercise. This section will also include your error analysis. (Error analysis needs to include "propagation of errors" as explained in referenced text, pp 55-61.) The conclusion allows you to review your experimental results in light of theory, bring together any germane information not covered in 'results', pontificate scientifically and give recommendations to improve the lab (if necessary).

Tie your report together by cross referencing. For example, if you report a value in your results section that is obtained from your data and calculations, indicate the page number where such data may be found. Likewise highlight conclusive data from the data and calculations sections that will be used in the results or conclusion sections. Title and explain all graphs, including labels of axis and units of slopes.

Computational Reports:

Provide reports organized. Use word processing of provided software to organize and label sections, so you and I can follow your work. Include appropriate comments, and answer all questions.

Calendar:

Notice that you are not assigned a new laboratory exercise each week. Some labs will require close to eight hours in the lab. Some labs will require extensive review of textbooks. You are encouraged to analyze data as soon after the experiment as possible to check for consistency with theory. You may need to repeat some experiments to present results consistent with theory. If you get behind in the syllabus, use the open days to bring yourself current. Your laboratory reports are due at the beginning of the laboratory period, two weeks subsequent to the assigned date. *Late reports* may be marked down one letter grade for each week (or partial week) late.

<u>Date</u>	<u>Laboratory Exercise</u>	<u>Assignment Due</u>
1/22	Expectations; Propagation of Errors; Intro to Mathcad	
1/29	Particle in a box: Computational Exercise	
2/5	Completion of the Mathcad labs	Intro to Mathcad
2/12	Beer's Law and the Spectrophotometric Determination of Two-components with Overlapped Spectra.	Procedural write-up Particle in Box
2/19	Thermal Decomposition of Benzoyl Peroxide	Procedural write-up
2/26	Lab completions	Report of 2/12 lab
3/4 lab	A Spectrophotometric Investigation of the Interaction of Iodine with Chlorobenzene and Xylene in Hexane	Procedural write-up Report of 2/19
3/11	Colligative Property: Measuring Freezing Point Depression with a Beckmann Thermometer	Procedural write-up
3/18	Spring Break	
3/25	Lab completions	Report of 3/4 lab
4/1	Rotation-Vibration Spectra of HCl(g)	Procedural write-up Report of 3/11 lab
4/8	Fluorescence intensity as a function of excitation.	Procedural write-up
4/15	Lab Completions	Report of 4/1 lab
4/22	Activation Energy and the Thermodynamic Properties of the Activation State.	Procedural write-up Report of 4/8 lab
4/29	Fluorescence lifetime and quenching	Procedural write-up
5/5	Lab Completions	Report of 4/22 lab
5/15	9:00AM Final	Report of 4/29 lab Laboratory Notebook

Evaluation:

10%: Notebook and lab technique: You will be judged on your prior preparation to lab as determined by your laboratory notebook and your understanding of the theory and procedure in lab.

75%: Report: Your grade on your report will reflect your results (40%); understanding of basic principles (40%); neatness, presentation and organization (20%).

15%: A Laboratory Exam will be given at the end of the semester during finals week.