Physical Chemistry Laboratory Class

(Chem 342L)

Thursday 8-11:00 am, C 108

Fall 2009

Department of Chemistry
South Dakota School of Mines and Technology

subject to change

Justin Meyer: Instructor

Office Hours (C 122): Monday, Wednesday, Friday: 1:00-2:30 pm or by appointment

Justin.Meyer@sdsmt.edu

TA: TBD Office Hours: by appointment

Text: None

Recommended Readings/Resources: *Physical Chemistry*: Silbey, Alberty, Bawendi
***Quantitative Chemical Analysis*: Harris**

Needed Equipment: Tablet Computer

Schedule of Labs

Each lab will have a pre-lab lecture. Labs will either be posted on D2L for you to print out or you will receive a handout of the lab a week prior to the lab. *Dates are subject to change!*

Week(s)	Date	Experiment		Data Pooled?
1	9/10	Check In and Lab Video Thermometer Calibration	All Class	
2	9/17	Heat of Reaction of Magnesium and Hydrochloric Acid*	All Class	
3	9/24	Electrochemical Cells	All Class	
4	10/1	Helmholtz Energy	All Class	
5,6,7	10/8 10/15 10/22	Adiabatic Gas Behavior Solution Calorimetry	Station Station	
8, 9	10/29 11/5	Determination of $\Delta_{fus}H$ Using Freezing Point Depression and Construction of Liquid-Solid Phase Diagram	All Class	
10, 11	11/12 11/19	Binary Liquid-Vapor Phase Diagram	All Class	
12	11/26	Thanksgiving		
13	12/3	Determination of Kinetic Values for Crystal Violet and Hydroxide	All Class	
14	12/10	Lab Check Out		

***** *Hard copies of the lab will be handed out.*

Lab Grades:

List of assignments/grade items and their due dates
(Subject to change)

Date	Assignment Due	Points
9/17	Thermometer Calibration	25
9/24	Heat of Reaction of Magnesium and Hydrochloric Acid	75
10/1	Electrochemical Cells	75
10/8	Helmholtz Energy	100
10/29	Adiabatic Gas Lab Report	125
10/29	Solution Calorimetry	150
11/12	Determination of $\Delta_{fus}H$ Using Freezing Point Depression and Construction of Liquid-Solid Phase Diagram	125
12/1	Binary Liquid-Vapor Phase Diagram	150
12/10	Determination of Kinetic Values for Crystal Violet and Hydroxide	100
12/10	Lab Books Due	200
???	Lab Books Spot Checks	75
	Discretionary Points	100
	Total Points	**1300**

Your grades will come from three main sources:

Lab Assignments: Each lab will have an assignment associated with it. This may include completion of a data sheet, submission of a graphs or graphs, submission of answers to selected questions, comments on lab results, or other as detailed in the lab handout. Each group should submit a single assignment unless otherwise noted. All assignments will be submitted to the correct dropbox in D2L as a single document with a pdf extension unless otherwise noted. Late assignments will have their total points reduced by 50% prior to grading. Assignments submitted later than 1 day will not be graded and receive a grade of **zero**.

Lab Books: Each **group** must keep a detailed lab book worth 200 points. See the document Guidelines for Lab Books on D2L for some background on what to include in your lab book. These will be turned in at on April 28th. An example grading sheet can also be found on D2L which will explain how your final lab book will be graded (This is subject to change and should be used as a guideline for what you should include). On top of your final lab book grade there will also be spot checks of your lab books in class. This may include checks prior to lab to see if everything is filled in that is needed or handing in your lab book at the end of class for a review. We will try not to keep your lab books for longer than a day so you will have them for completing your assignments.

Discretionary: There will be an additional 100 discretionary points for the course. You will start with these points and they may be taken away at any time for performance or behavior that may warrant it. For example, improper use of equipment, poor lab practices, tardiness, and improper waste disposal just to list a few examples. Peer evaluations could also result in loses of points for failure to work well with your lab partner.

The following grading scale will be used as a starting point. The grade cut offs may be lowered, but will not be raised from those listed below:

A: 90% B: 82% C: 74% D: 66% F: <66%

In order to pass the course, you need to hand in ALL ASSIGNMENTS. Failure to hand in an assignment by the end of finals week will result in an automatic zero for the course.

Lab Guidelines:

Students will work with a partner throughout the length of the lab. You will get to pick your partner, as you will need to work with someone that you can meet with outside of the lab. This will make calculations and other things easier.

Equipment for this lab must be handled with the utmost care. In some cases we only have one instrument and if it breaks it means problems. For this reason if you have any questions about how to operate an instrument, balance, IR, etc., please ask before making assumption.

Students will not be required to be in the lab when they are not working on an experiment. It is understood that you may want to work on calculations and writing outside of the lab. It will be your responsibility to utilize your time so you complete all the labs in the windows provided. To do this it is recommended that you spend time PRIOR TO LAB reviewing the handout and planning out what you will be doing in the lab as to save time. We will try our best to make sure all the equipment and chemicals are available and working during the lab period.

Safety Rules:

As there may be multiple labs going on at the same time it will be very important to be aware of yourself and others in the lab.

- You will not be allowed to do an experiment without proper preparation in advance. If you are not prepared to perform a given lab you may be asked to leave until you are and will lose discretionary points. These situations may arise from one of the following:
    - If you did not read the lab draft in advance and show that you understand important points.
    - If you missed a pre-lab lecture for a lab. You will need to meet with the instructor or TA in this case.
    - Information that should be completed in your lab book prior to lab is not completed.
- You must wear proper attire; this includes department approved safety goggles. Failure to do so may result in you being asked to leave the lab for that day.
- Any unauthorized experiment at any time will result in the immediate assignment of a final grade of "F" for the course.
- Dispose of laboratory materials in the proper waste bottles located in the hood or designated area. With multiple labs taking place at the same time there may be multiple waste bottles available, so make sure you use the right container. If you are unsure of how to dispose of something **ASK**!
- Laboratory drawer replacement items are free-of-charge only on the first

scheduled meeting. After the initial checkout day, you will be responsible for the replacement of broken or missing items. This includes, but is not limited to, items that are lost due to your failure to return them to your drawer or your failure to lock your drawer. Replacement items are to be paid for at the time of their acquisition.

- Unexpected events (emergencies, spills, accidents, etc.) must be brought to the immediate attention of your TA. Do not leave the lab without informing your TA of the event.
- The use of tablet/laptop PCs in the lab will be prohibited. You may store them out of harms way during the lab, but you may not use them in the lab.

Fine for Failing to Check-in or Return Key: All students who have checked out a lab locker and drawer key are required to check the locker and key in at the end of the semester or earlier if withdrawing from the course. A fine of $30.00 is assessed for failure to check-in and a fine of $100.00 is assessed if you lose your key or fail to turn it in upon check-in. If circumstances force you to withdraw from the lab before the end of the semester, you should make arrangements with the laboratory manager (Margaret Smallbrook, C 123) to check in your desk and key in order to avoid the fines.

ADA Statement

At the recommendation of the ADA Advisory Committee, we are asking that you use the following language as the ADA statement:

> *Students with special needs or requiring special accommodations should contact the instructor, (Justin Meyer, at 394-2431) and/or the campus ADA coordinator, Jolie McCoy, at 394-1924 at the earliest opportunity.*

Freedom in Learning Statement

The following statement should be used on all syllabi.

> *Freedom in learning. Students are responsible for learning the content of any course of study in which they are enrolled. Under Board of Regents and University policy, student academic performance shall be evaluated solely on an academic basis and students should be free to take reasoned exception to the data or views offered in any course of study. Students who believe that an academic evaluation is unrelated to academic standards but is related instead to judgment of their personal opinion or conduct should contact the dean of the college which offers the class to initiate a review of the evaluation.*