CHEM 352L. PHYSICO-CHEMICAL MEASUREMENTS (SPRING 2021)

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REQUIRED TEXT: Custom Lab Manual for UHM CHEM 352L

COURSE DESCRIPTION: CHEM 352L is a Writing Intensive laboratory course that couples experimentation with scientific writing. The course focuses on the understanding and application of principles of physical chemistry, the use of scientific instrumentation, and the organization and explanation of results in laboratory reports.

GRADING:

1. YOUR SEMESTER GRADE WILL BE CALCULATED FROM:

Written Reports and Notebooks	80%
• *Heat-Capacity Ratios for Gases* (10%) • *Conductance of Solutions* (10%) • Average of the remaining 7 experiments (60%)	
Final Assignment	10%
Performance in the Laboratory (as evaluated by TAs)	10%
(Total:	**100%)**

2. EACH OF THE 9 EXPERIMENTS WILL HAVE THE FOLLOWING POINT BREAKDOWN:

Notebook	15%
Abstract	5%
Introduction	20%
Experimental	5%
Data/Results	10%
Calculation/Error Analysis	15%
Discussion	25%
References	5%
(Total	**100%)**

Minor adjustments to this breakdown may be made, based on the content of a given experiment.

The content of and standards for a well-conceived and well-written lab report will be explained in class. Briefly, a good lab report includes concise descriptions of both the experiment being performed and the results you obtained, among other key features. Typical CHEM 352L lab reports do NOT exceed 10 pages; points will be deducted for needlessly verbose reports.

3. **Changes to the course may occur, as the conditions of the pandemic evolve.** Such changes may include changes to our schedule or the grading scheme. Any significant changes will be confirmed in writing (with a revised syllabus).

4. **You are required to follow COVID safety protocols,** in addition to standard lab safety policies:

- **Please arrive on time for your experiment and leave upon completion.** Experiments are scheduled for start times of 1:30 p.m. or 4 p.m. Please wait outside of the room (Bilger 202) or until the TAs invite you into the room. Please do not cluster, even if outdoors on the lanai or courtyard, before or after your assigned in-person lab time.

- **Face masks (covering nose and mouth) are required upon entry to the lab classroom and for the duration of the class.**

    - **Note that UH requires face masks for all on-campus activity.** Per UH's website, *"Anyone without a medical reason who refuses to wear a face covering will be asked to leave campus."* UH also advises notification of Public Safety (campus security) and the Dean of Students.

    - Masks constructed from natural fibers (vs. synthetic materials) are preferable, as they minimize possible negative effects of chemical vapors. Note, however, that 352L experiments typically use fewer volatile chemicals than other labs, and manipulations are always done in the fume hood. (I.e., the risk of chemical vapors causing problems with your mask is low.)

    - **Wearing a mask is required for CHEM 352L.** 352L students who do not wear their masks (or do not wear their masks properly) will be asked to do so. Upon this direction, he/she/they must wear the masks properly and immediately -- and will continue to do so for the remainder of the lab class. If not, he/she/they will be excused for the day and will have a "0" for the day's experiment (i.e., the lab report for this day's experiment will be a zero). In addition, this student will be reported to the Dean of Students. If there is a second occurrence (not wearing mask/not wearing mask properly & refusal to comply after one request), he/she/they will receive a "F" for the semester. As with the first violation, the second occurrence will be reported to the Dean of Students.

- **Please observe "social distancing" at all times, especially while indoors.** Please try to keep a minimum of a 6-foot distance between each other.

- **After you have completed your experiment for the day, you must sanitize your work area.** Your TAs will instruct you on steps to take, what to use, etc.

- **Students should consult the UHM's website for additional information and resources:** https://manoa.hawaii.edu/covid19/guidelines/

5. **Attendance at all class meetings is mandatory.** Follow the attached schedule.

- You will attend class, on campus, on the designated dates and times.
- On days that are designated for online class meetings, we'll meet via Zoom.
    - Tuesday section Meeting ID: [redacted] (Passcode: [redacted])
    - Wednesday section Meeting ID: [redacted] (Passcode: [redacted])

6. **Slack for Out-Of-Class Discussion and Questions**

- We are using the free version of Slack (https://slack.com/), which is supported on a number of platforms. You can also use Slack in your favorite browser.
- Use the Slack channels to ask questions, instead of Laulima or even email. Slack will allow everyone to see your questions & answers (from me or others, relevant discussion, etc,
- Use this link to join our Slack workspace **([redacted])**. This link will expire on or about 2/3/2021. Please contact me for an updated invitation, if it expires before you are able to join.
- The Slack channels are akin to threads, and each is denoted with the hashtag. Please post your questions about the lab to the channel for 352L (#[redacted]).
- You are all welcome to send DMs to Prof. Kumashiro and your TAs via Slack.
- As always, remember that another person will read what you write – and we all want to help each other learn this most excellent material – so, write your messages with care and courtesy, and please treat each other in the respectful manner that you would use, if we were meeting in person.

7. **The "Revision" Process for Experiments Run on 1/26-1/27 and 2/2-2/3:**

To learn to write well, you need to practice, and you also need timely feedback. Therefore, the first two experiments (and lab reports) are graded using a process that allows you to revise and improve your reports, based on feedback from your TAs.

The first two reports must be resubmitted after they have been graded. Your first two lab reports will be extensively critiqued. The revisions must address the points of the critique. If the rewritten report earns a higher score than the original submission, the score of the rewrite will supersede (replace) the score for the original report. Due dates for revised reports will be specified in class.

8. **The Importance of a Good Laboratory Notebook.** In principle, it is probably the most important "15%" of your lab report grade.

As discussed on the first day, the lab notebook is a critically important tool in experimental chemistry. Prior to your lab class, you should read the experiment carefully. As part of your preparation (i.e., all written in your notebook before you get to class!), you should state the **OBJECTIVE** of the experiment for the week, outline the **PROCEDURE**, and prepare for **DATA COLLECTION** (e.g., table). Your TAs will provide additional guidance on what to include.

To reinforce good habits, **lab notebooks must be initialed by your TA before you leave the laboratory**. Your TA will initial all the pages that you've used for the day. A photocopy of the relevant pages of the laboratory notebook must accompany the report for each experiment. If these photocopies are missing from your lab report, then it (your report) will be returned to you without a grade (and will be assessed the appropriate penalty starting from the day it was due, not the day you get it back), if the pages are missing.

We want to see your writeup based on <u>your</u> data. There is no benefit in using someone else's data. PChem Lab is not Analytical Chem lab, so your grade does not depend on the accuracy or precision of your experimental data (clearly, however, your report will be much harder to write in worst case).

9. **DEADLINES FOR LAB REPORTS AND LATE PENALTY FOR SPRING 2021**

- You are strongly encouraged to submit your reports on time.
- All reports are due exactly one week after the completion of the experimental work.
    - If you are scheduled for a 1:30 p.m. start time, your report is due at 1:30 p.m.
    - If you are scheduled for a 4:00 p.m. start time, your report is due at 4 p.m.
    - If you are not scheduled for in-person lab work, then your report is due at 1:30 p.m.
- Lab reports should be submitted in hardcopy format. Electronic format will be allowed on a case-by-case basis and only in unusual circumstances.
- Submit the lab report to your TAs, *<u>not</u>* Prof. Kumashiro.
- *If you submit your report on-time,* your graded report should be returned to you in ~1 week (and no more than 2 weeks!).

For the first two experiments: Late reports will be assessed a penalty of 20% per weekday late.

For remaining experiments: Late reports will be assessed a penalty of 5% per weekday late, with the additional condition that **all** reports are due by <u>Friday, April 30, 2021, 4:30 p.m.</u> No reports will be accepted after this deadline.

Extensions and/or reduced late penalties are made only for documented medical/family emergencies.

10. POLICY ON ACADEMIC DISHONESTY:

Students with the privilege of attending the University of Hawai'i will conduct themselves honorably at all times. To give, to receive, or to use aid of any kind during an examination injures the university, students doing honest work, and the individual guilty of such dishonesty.

Acts of academic dishonesty include, but are not limited to, giving or receiving unauthorized assistance during an exam, obtaining unauthorized information about an exam before it is given, submitting another's work as one's own, using prohibited sources of information during an exam, and altering answers after an exam has been submitted. Such acts will result in the appropriate actions in accordance with the University of Hawaii's policy on student conduct and academic honesty.

Most of these examples focus on exams, but you will also take note of the clear language about "*submitting another's work as one's own*", which is directly relevant to your lab reports.

If/when there is evidence of cheating, possible outcomes include a "zero" for the lab report (or exam or other assignment), an "F" for the class, and/or a report to the Office of Judicial Affairs for academic dishonesty.

CHEM 352L, Spring 2021

Schedule of Topics

		1/12-1/13	1/19-1/20	1/26-1/27		2/2-2/3		2/9-2/10*	2/16-2/17	2/23-2/24	3/2-3/3	3/9-3/10				3/16-3/17	3/23-3/24	3/30-3/31		4/6-4/7		4/13-4/14		4/20-4/21		4/27-4/28		5/4-5/5	
		1:30	1:30	1:30	4:00	1:30	4:00	1:30	1:30	1:30	1:30	1:30	2:45	4:00	5:15		1:30	1:30	4:00	1:30	4:00	1:30	4:00	1:30	4:00	1:30	4:00	1:30	4:00
Topic or Experiment	**TA**																												
Review of Syllabus; General Safety Overview		All																											
Writing Lab Reports, Error Analysis	Both		All																										
Exp. 3: *Heat-Capacity Ratios for Gases*	[redacted]			A	B	D	C																						
Exp. 17: *Conductance of Solutions*	[redacted]			C	D	B	A																						
Exp. 6: *Heats of Combustion*	[redacted]							A	C	B	D																		
Exp. 12: *Chemical Equilibrium in Solution*	[redacted]							B	D	A	C																		
Exp. 42: *NMR Determ. Keto-Enol Equil. Const.*	[redacted]											A	B	C	D														
Spring Break																All													
TBD																	All												
Exp. 34: *Absorption Spectrum of a Conj. Dye*	[redacted]																	B	A	D	C								
Exp. 39: *Abs & Em Spectra of I2 (Abs only)*	[redacted]																	C	D	A	B								
Exp. 37: *Vibr-Rot Spectra of HCl and DCl*	[redacted]																					B	A	D	C				
Exp. 31: *Magnetic Susceptibility*	[redacted]																					C	D	A	B				
Online Class Meeting		All	All					***NOTE: C&D meet online***																		All			