

Chemistry 161L Lab – General Chemistry Lab I

Spring 2020

TA: name
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Office Hours

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Philosophy: Experimentation is at the heart of chemistry. Most new knowledge in chemistry comes from careful examination and interpretation of experimental results. To have confidence in your results, it is important that the experiments be executed carefully and properly. This laboratory is designed to teach you lab skills, reinforce concepts from lecture, and show you how to think about scientific problem solving.

I. Required Materials/Equipment

Laboratory Manual: Available at the UH Manoa bookstore. The lab schedule is posted on Lulima, on the lab door, and at the bottom of this document.

Safety Glasses: All students are required to have departmental (OSHA) approved safety glasses or goggles for use in the laboratory at ALL times. If you wear glasses, you will need safety glasses or goggles over your glasses.

Laboratory Attire: Proper lab attire will be required at ALL times. You must always attend lab wearing safety glasses, knee-length (preferably long) pants, close-toed shoes, and a shirt that covers the upper body (at least equivalent to a t-shirt). Long hair should be tied back. If your TA determines you are dressed inappropriately, you will not be allowed in lab and sent home to change.

II. General Information

Attendance: Each lab will start promptly on time. Do not be late. You will not be allowed to submit work for a lab you did not attend. Unexcused absences will result in a zero for that lab no matter what you turn in. If you miss more than two labs you cannot earn a passing grade, NO Exceptions. Excused absences (court, funeral, professional trip, athletic event, super sick) require notification and prior arrangements.

Cell Phones: No cell phone use by the lab benches, this practice avoids chemical contamination.

Safety: You are responsible for your own safety in lab. Take it seriously. No horseplay! Your TA will ask you to leave if they feel like you are putting others at risk. No food, drink, or gum will be allowed in lab.

Lab Grading: Lab performance will be based on participation, prelab assignments, homework, and lab report. Approximate break down is experiment participation 10%, prelab, 20%, homework 20%, and lab report 50%.

Academic Integrity and Dishonesty: Use *your* original words and ideas for all of your lab reports or properly cite the words and ideas of others. Your lab report should *NOT* be identical to your lab partner's. If you submit work that is not your own, you will get an "F" grade for the entire course.

III. Day of Lab

- * All students are expected to come prepared for lab. Before coming to lab you should familiarize yourself with the theory, techniques, and safety precautions for the experiment.

Homework: Homework for each experiment is found in Appendix 1 and will be due at the beginning of lab.

Prelab assignment: On a piece of plain white copy paper, you should have the **title, objective statement, background, and procedure for the experiment** (see below for more instruction).

Presentation: The TA will give a brief presentation of the day's lab with hints, tips, and tricks.

Experiment: You will be working in groups of two to perform each experiment. Write down all of the data and understand what you have done during the lab so you can write the lab report. Try to finish the lab report as soon as you can after the lab. You will be more successful than if you wait until the next week to finish it.

- * Always write in your notebook in PEN, not pencil! Mistakes in the lab notebook should be crossed out with a single line. Whiteout, etc is not acceptable.

Lab Reports: Will be due at the beginning of the following lab period. Lab reports include prelab, data sheets, calculations sheet, any paper used for calculations, and answers to the questions. Late lab reports will be marked down 20% per day.

III. Lab Notebook

Purpose: The purpose of a research lab notebook is to enable your work to be duplicated without you present. This means, it should be complete enough that you or **any other worker** at the same level as you to understand your experiment and the results. Although Chem 161L lab experiments aren't in a true research environment, it is still a goal to teach the habits and level of detail that are required of a scientist or any other (medical, legal, engineering) professional.

- * The notebook should always be entirely written in third-person removed viewpoint, using complete sentences and proper punctuation. This means no pronouns! No "I" or "we" or "the researchers" or "this researcher". You will need to learn this style of writing.

* Each lab entry in the notebook should include after the title:

- 1) **Objective:** a concise statement (a full sentence) of the purpose of the experiment;
- 2) **Background:** Important information needed to complete the experiment. This includes: a table of all chemicals, chemical formula, and hazards (if any); a list of glassware/ special equipment used;
- 3) **Procedure:** an outline, in your own words, of the procedure that will be followed (bulleted points are ok).
- 4) **Results:** all results and observations must be written directly in the lab notebook on the data sheet. For the final report, computer-generated tables and graphs are encouraged and must be included.
- 5) **Calculations:** should either be done on a separate paper or on the back of the data sheet in the lab notebook. Each calculation should be written neatly with units and labels, and crossed out if the calculation is wrong. The "answer" should be included in the calculations sheet. If a calculation was performed in Excel, note it;
- 6) **Questions:** Answer the questions in the questions section of the lab.

Lab Schedule:

Dates	Monday	Tuesday	Wednesday	Thursday	Friday
8/26 – 8/30	No lab	No lab	No lab	No lab	No lab
9/2 – 9/6	No lab – Labor Day	Check in Safety	Check in Safety	Check in Safety	Check in Safety
9/9 – 9/13	Check in/Safety Density	Density	Density	Density	Density
9/16 – 9/20	Sublimations	Sublimations	Sublimations	Sublimations	Sublimations
9/23 – 9/27	Avogadro's Number	Avogadro's Number	Avogadro's Number	Avogadro's Number	Avogadro's Number
9/30 – 10/4	Chemical Formula	Chemical Formula	Chemical Formula	Chemical Formula	Chemical Formula
10/7 – 10/11	Solutions	Solutions	Solutions	Solutions	Solutions
10/14 – 10/18	Redox & Activity	Redox & Activity	Redox & Activity	Redox & Activity	Redox & Activity
10/21 – 10/25	Gas law	Gas law	Gas law	Gas law	Gas law
10/28 – 11/1	Calorimetry	Calorimetry	Calorimetry	Calorimetry	Calorimetry
11/4 – 11/8	Spectrophotometry	Spectrophotometry	Spectrophotometry	Spectrophotometry	Spectrophotometry
11/11 – 11/15	No lab - Veterans Day	Atomic Spectra	Atomic Spectra	Atomic Spectra	Atomic Spectra
11/18 – 11/22	Atomic Spectra	Molecular Models Check Out	Molecular Models Check Out	Molecular Models Check Out	Molecular Models Check Out
11/25 – 11/29	Molecular Models Check Out	No lab	No lab	No lab - Thanksgiving Day	No lab
12/2 – 12/6	No lab	No lab	No lab	No lab	No lab
12/9 – 12/13	No lab	No lab	No lab	No lab	No lab
12/16 – 12/20	Finals week				

**Chem 161L, Spring 2020
Tentative Lab Schedule**

January

1	13-Jan	14-Jan	15-Jan	16-Jan	17-Jan
2	20-Jan MLK day	21-Jan	22-Jan	23-Jan	24-Jan
3	27-Jan Lab Check-in /Excel/Safety	28-Jan Lab Check-in /Excel/Safety	29-Jan Lab Check-in /Excel/Safety	30-Jan Lab Check-in /Excel/Safety	31-Jan Lab Check-in /Excel/Safety

February

4	3-Feb Density	4-Feb Density	5-Feb Density	6-Feb Density	7-Feb Density
5	10-Feb Avogadro's #	11-Feb Avogadro's #	12-Feb Avogadro's #	13-Feb Avogadro's #	14-Feb Avogadro's #
6	17-Feb PRESIDENTS DAY	18-Feb Chemical Formula	19-Feb Chemical Formula	20-Feb Chemical Formula	21-Feb Chemical Formula
7	24-Feb Chemical Formula	25-Feb Solutions	26-Feb Solutions	27-Feb Solutions	28-Feb Solutions

March

8	2-Mar Solutions	3-Mar Redox & Activity	4-Mar Redox & Activity	5-Mar Redox & Activity	6-Mar Redox & Activity
9	9-Mar Redox & Activity /Gas Law	10-Mar Gas Law	11-Mar Gas Law	12-Mar Gas Law	13-Mar Gas Law
10	16-Mar Midterm Break	17-Mar Midterm Break	18-Mar Midterm Break	19-Mar Midterm Break	20-Mar Midterm Break
11	23-Mar No Lab	24-Mar No Lab	25-Mar No Lab	26-Mar Kuhio Day	27-Mar Calorimetry
12	30-Mar Calorimetry	31-Mar Calorimetry			

April

			1-Apr Calorimetry	2-Apr Calorimetry	3-Apr Sublimation (lab 2)
13	6-Apr Sublimations (lab 2)	7-Apr Sublimations (lab 2)	8-Apr Sublimations (lab 2)	9-Apr Sublimations (lab 2)	10-Apr Good Friday
14	13-Apr Spectrophotometry	14-Apr Spectrophotometry	15-Apr Spectrophotometry	16-Apr Spectrophotometry	17-Apr Spectrophotometry
15	20-Apr Atomic Spectra/ Molecular Models/ Check out	21-Apr Atomic Spectra/ Molecular Models/ Check out	22-Apr Atomic Spectra/ Molecular Models/ Check out	23-Apr Atomic Spectra/ Molecular Models/ Check out	26-Apr Atomic Spectra/ Molecular Models/ Check out
16	27-Apr	28-Apr	29-Apr	30-Apr	

May

					1-May
17	4-May	5-May	6-May	7-May	8-May
18	11-May Finals Week	12-May	13-May	14-May	15-May