CHEM 1451 Lab 0 Background and Procedure

What to Do First

During Week 1, you should begin the Lab Orientation and Check-In process. If you have not already done so:

- Read the Syllabus carefully in its entirety;
- Rent/purchase the Laboratory Kit at UT-Arlington Bookstore (instructions in the Syllabus); and
- Create your LabFlow account and enroll in our section (instructions in the Syllabus).

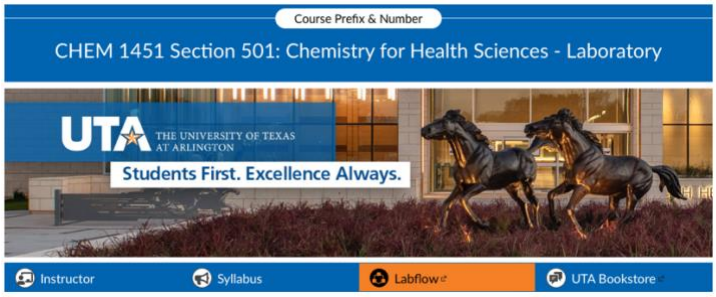
*Please note: It is your responsible to be familiar with the course structure, schedule, and policies as explained in the Syllabus, **order your lab kit as soon as you can (it takes 1-2 weeks to arrive)**, enroll in our LabFlow section and resolve any technique issues before an assignment's due date (technology support and late penalty policy listed in the Syllabus).*

Orientation and Check-In are Mandatory

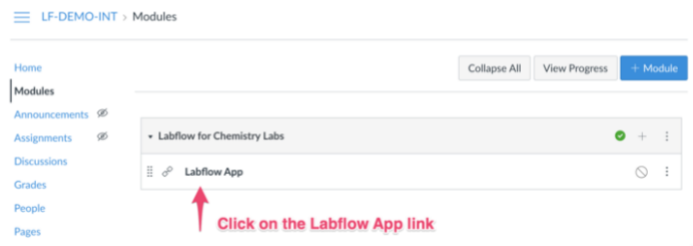
The purpose of the orientation and check-in process is to prepare you to perform lab experiments at home, explaining how each experiment is organized and giving you the practice to submit your report on Labflow online platform. **Mandatory completion of the Lab Check-In by the end of Week 2 is REQUIRED to proceed with the course and every Lab 0 assignment will be graded.** You need a *correct, valid Lab Kit serial number* to access all the labs in the course. Failure to do so will result in late penalty (as specified in the Syllabus) as well as restriction to access LabFlow, which means all your subsequently missed assignments will receive a zero grade.

Lab 0 - LabFlow Orientation and Navigation

You must have your own Labflow account for your grades to be synced to Canvas gradebook, i.e., your Final Grade (or Lab Average). LabFlow enrollment instructions are specified in the Syllabus. You can access Labflow through the homepage of CHEM 1451 Section 501 Canvas course:



Once you have arrived at the Module in Canvas, click on the Labflow App link.



You should have been navigated to the App launching page. To launch Labflow click the "Load Labflow App in a new window" button. All assignment links in Canvas will also bring you to the Labflow online platform.

Once you have logged into Labflow, under "Lab 0: Orientation and Check-In", you will:

- Read "Lab 0 Notes and Announcement – Orientation and Check-In" and *MARK COMPLETE* (otherwise, all subsequent assignments remain locked)
- Read "Lab 0 - Labflow Orientation for this Course" for complete instructions on how to navigate LabFlow
- Read "Lab 0 - Lab Syllabus" (if you have not already done so)
- Read "Lab 0 – Background and Procedure" (this document)
- Download "Labs 1-7 – Material Lists" – Make sure you have all chemicals, equipment, and household items ready. Plan ahead to obtain *at the beginning of the semester*: **one box of food dye for Lab 2** (McCormick® Assorted Food Colors & Egg Dye: accessed on 12/02/2022; $14); **citric acid for Lab 3** (100% pure, typically in solid powder form; minimum of 10g; $14).
- Watch "Video – Handling and Storing Chemicals" (04:54 min)
- Watch "Video – Using Common Glassware" (04:06 min)
- Watch "Video – Cleaning and Maintaining Glassware" (05:19min)
- Complete "Lab 0 Quiz – Lab Syllabus" (100 points; unlimited attempts; highest grade will be recorded)
- Complete "Lab 0 Quiz – Labflow Orientation" (100 points; unlimited attempts; highest grade recorded)
- Order you Lab Kit and complete "Lab 0 – Lab Check-In Part 1" (more details on Page 3)
- Once you have received your Lab Kit, check the inventory and complete "Lab 0 – Lab Check-In Part 2" (more details on Page 3)

Occasionally, Labflow is not behaving as you expect and the following screen pops up. When it happens, try logging out and going to https://labflow.com/reset to log back in.

Lab 0 - Lab Kit Order Verification

This course includes hands-on lab experiments as a part of the course work. In order to complete the experiments, you must rent the lab kit from at the UT-Arlington Bookstore (instructions in the Syllabus). No other arrangement will be accepted. (We do not accept the Lab Kit passing from one student to another.)

- ⇒ It is your responsibility to submit the rental order as soon as you can and to receive the lab kit before the end of the lab check-in and orientation period. Please note that it takes 1-2 weeks for lab kit to arrive.
- ⇒ If you have not received the kit within *two* weeks after placing an order, please contact Cindy at UTA Bookstore via email (c.medlen@follett.com) as soon as you can.
- ⇒ If you have submitted the Lab Check-In assignments but do not have access to the Lab 1 Notes and Announcements, there was an issue with your lab kit number. Please reopen Lab 0 - Lab Check-In Part 2 - Lab Kit Verification and Component Inventory, review your coach's notes, and fix the kit number. You may want to alert your coach about the updated kit number so they know to review it again.
- ⇒ After Week 2, if you still do not have access to the Lab 1 Notes and Announcements to move forward with the assignments in LabFlow, you need to reopen the Lab Check-In Part 2 in LabFlow to fix your Lab Kit serial number and then contact your Lab Instructor at teresa.yiu@uta.edu (NOT your Coach).
- ⇒ You will need the lab kit to perform the Lab 1 experiment. Failure to do will result in late penalty as specified in the Syllabus.

The purpose of **Lab Check-In Part 1** is to confirm that you placed a UTA Lab Kit rental/purchase order. This assignment is worth 100 points with 10 attempts allowed. *You do NOT need to wait for your Lab Kit to arrive* in order to complete Lab Check-In Part 1. You should complete this assignment as soon as you have rented/purchased your Lab Kit so we are notified of your order.

The purpose of **Lab Check-In Part 2** is to ensure that you rented (or purchased) from the UT-Arlington bookstore and that all of them are in working condition (that is, not broken). If you are missing an item or it is damaged, you will need to contact Cindy Medlen (Department Manager General Merchandise) via email (c.medlen@follett.com) as soon as you can. Make sure to communicate with her via email, and please do NOT call to the bookstore because your communication will become untraceable. Again, **if you have not received the kit within two weeks after placing an order, please contact Cindy via email as soon as you can.**

Please note: If you are retaking this course and using the lab kit that you rented or purchased previously from the UTA bookstore, you must contact Cindy Medlen (Department Manager General Merchandise, c.medlen@follett.com) as soon as you can. When she verifies your purchase, she will provide you with the lab kit number and the paper work that is necessary for the lab check-in. Please do not call, but email her so that your request will become traceable. If you are retaking this course, you will also need to purchase a new set of "Paper Kit" from the Bookstore.

From Lab 1 to Lab 7

You will complete seven experiments. Five experiments last for two weeks, and two experiments last for one week.

Organization of Lab Experiments

Each experiment usually lasts for two weeks: You will complete "LabFlow Prelab Quiz (part 1 of 2)", perform an experiment (collecting data), and complete "LabFlow Report Prep and Data Submission (part 2 of 2)" in its first week. Then, you will complete "LabFlow Postlab Report" in its second week. Each assignment is worth 100 points. A "Background and Procedure" file contains the background information and the experimental procedure that you perform. You need to complete "LabFlow Prelab Quiz (part 1 of 2)" and "LabFlow Report Prep and Data Submission (part 2 of 2)" during the first week. You will complete "LabFlow Postlab Report" during the second week. The following table is the general organization of lab experiments:

1st Week		
CHEM 1451 Lab # Background and Procedure file	Background Information	It provides chemistry relevant to an experiment that you will perform.
	Procedure	Materials you need for an experiment are listed. Step-by-step instructions are given to perform the experiment.
LabFlow Prelab Quiz		Solve them before starting an experiment. Problems are based on the content of Background Information.
LabFlow Report Prep and Data Submission		Submit data you obtain when you perform the experiment.
2nd Week		
LabFlow Postlab Report		Solve post-lab problems by using the data.

Always Plan Ahead

- **All lab assignments are open two Fridays before the due date (on Sunday midnight CST, except for the Lab 7 Postlab Report), so you will have two full weekends and plenty of time ahead to finish your reports.**
- Please note that all due dates are specified in Central Standard Time (CST) with Daylight Saving Time observed. If you are located in a different time zone, make sure to plan your experiment to complete the assignments according to the schedule specified in the Syllabus.
- Use the "Add to my calendar" function in LabFlow to add the due dates of your assignments to your online calendar so you will not miss them (more details in the document "Lab 0 - Labflow Orientation for this Course" under Lab Module 0).
- You are recommended to start gathering all materials you need as soon as you can before you perform the experiment (download the "Labs 1-7 – Material Lists" under Lab 0 Module). If you wait until the last minute and miss the deadline of the experiment due to missing materials or broken instructions, **the extension to the deadline will not be granted.**
- By the end of Week 1, make sure that you have the Lab Kit rented from the UT-Arlington Bookstore (instructions in the Syllabus). By the end of Week 2, verify the content of the Lab Kit with a *correct, valid Lab Kit serial number* to access all the labs in the course. You will need it next week to perform the experiment. Don't wait until the last minute.

In the First Week of an Experiment

In a "Background and Procedure" file, you will find the background information you need to understand for the experiment. You must read the content of the background information to understand the chemistry behind the experiment you perform. The background information also contains examples of questions that are similar to questions in pre-lab problems and important to post-lab questions.

The Background and Procedure file also provides spaces to record your data for the experiment. You are recommended to have the printout ready while performing your experiment, then enter your data in LabFlow.

After reading the background information, you should complete "LabFlow Prelab Quiz (part 1 of 2)". Then you will perform the experiment according to the instructions given in the procedure file, recording the data in "LabFlow Report Prep and Data Submission (part 2 of 2)".

If you are not sure how to navigate or enter your data in LabFlow, refer to the document "Lab 0 - Labflow Orientation for this Course" under Lab Module 0.

Your response in "LabFlow Prelab Quiz" will be automatically evaluated. Your Academic Coach will check your measured data in "LabFlow Report Prep and Data Submission" and let you know if you need to re-do experiments. If you need to re-do experiments, then you must do so and indicate it in your "LabFlow Postlab Report". Otherwise, you will lose points in "LabFlow Postlab Report".

If you are not sure how to check your feedback of your reports, refer to the document "Lab 0 - Labflow Orientation for this Course" under Lab Module 0.

In the Second Week of an Experiment

You will complete a "LabFlow Postlab Report" by first entering your data from "LabFlow Report Prep and Data Submission," adjusting your data only if you were told to re-do experiments.

You will answer Postlab questions by using the data that you collected in the previous week. Therefore, it is important that you have reasonably correct data to answer the Postlab questions. You will be graded on your technical skills to get the results. Please take your time and do not rush. If you rush through experiments to finish quickly, you may not obtain an acceptable result. Poor performance and data will most likely result in not receiving credit for that experiment. You need to be careful and patient when you perform chemistry experiments. Therefore, we will not accept the excuse, "I should receive the full credits for an incorrect answer because it is based on my experimental data."

CHEM 1451 Lab Report Submission Guidelines

The rest of this document explains how to submit a lab report to the LabFlow online platform. In the laboratory section of this course, one of the primary objectives is to learn how to write a scientific lab report correctly so that others can understand the experiment that took place. You should read it carefully because you are expected to write a scientific lab report correctly and submit it digitally in this course.

1. Data Entry

In both "LabFlow Report Prep and Data Submission" and "LabFlow Postlab Report," you are required to first enter your data in the data entry section. Once you have left the data entry section in LabFlow, you will NOT be able to change the data you entered. Therefore, **you should always review and change any data you enter BEFORE moving into calculations. You are only allowed to submit your report twice. However, in your second attempt, you cannot modify your data.**

1-1 Record the value in a designated area.

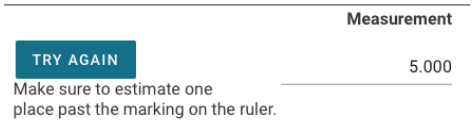
In order for LabFlow to recognize and evaluate your data, you must record it in the designated area of the report.

1-2 Use the correct number of significant figures.

Record your measurements with the correct number of significant figures. If you enter the data with the incorrect number of significant figures, LabFlow will automatically warn you to enter the correct number of significant figures. If you ignore this message, you will have points taken off if you do not adhere to this basic practice of writing a scientific report. You cannot write a random number of zeros or round off a number randomly in a measured number. Remember the following rule of thumb:

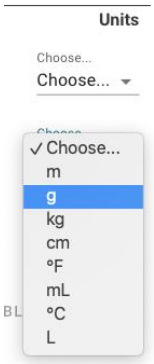
- Read to the tenth of the smallest printed scale available on an instrument. (On a digital display, enter all numbers in the display.)

Exceptions will be informed to you if any.



1-3 Use the correct units.

Record your measurements with the correct units. You will have points taken off if you do not adhere to this basic practice of writing a scientific report. In LabFlow, you will choose the correct unit from the dropdown menu.



2. How to Show Your Work

Many questions in lab reports require you to show your work in detail. Please note that **you will not receive full credits by merely entering the correct answer.** The purpose of this course is to train students to write a scientific lab report and communicate your thoughts and logic to a chemistry problem, using significant figures correctly in measurements and calculations, and writing your answers so clearly and logically that others can read and understand.

You need to upload a picture your work separately for each question. Please make sure that you have uploaded the pictures of your solution properly before submitting your report.

When you write your lab report, you should aim to meet all the following criteria:

2-1 Submit your answer in a designated area.

In order for LabFlow to recognize and evaluate your answer, you must enter your value and upload your work in the designated area of the report.

2-2 The correctness of your answer.

LabFlow automatically evaluates the correctness of the answer you enter.

2-3 Use the correct number of significant figures.

LabFlow automatically evaluated the correct use of significant figures of the answer you enter. Throughout your solution, you should also aim to use the correct number of significant figures.

2-4 Use the proper units.

LabFlow automatically evaluates the proper use of units you selected for the answer.

2-5 Explain the equations that you use in your solution.

The answer should correctly show how the student reached the solution, corresponding to the entered value in LabFlow. **You need to state and explain the equations that you use in your solution**. For example, if it is a definition, explain to us that the equation is a definition. If you use an equation derived (that is, rearranged) from another equation, you must show how you derived the equation step by step. *You cannot expect us to know how you derive the equation.* That means, if you fail to start your solution with the correct equation, you will receive a zero.

2-6 Write your solution logically. Explain what you are writing.

The logic must make some sense with respect to the question. We are grading how you reached your conclusions, so **we must see the steps you took.** We are looking for calculations without any errors or mistakes. That means, if you fail to show your work, and/or if you make any errors or mistakes in your calculations, you will receive a zero.

2-7 Explain all the symbols that you use in your solution.

The solution should be communicated in a way that does not require guessing. When you write a report formally, **you must explain all the symbols that you use in your solution**. For example, you cannot assume that the symbol "*d*" always means the density, and you cannot expect us to know your assumption. It could mean the diameter. The bottom line is to explain all the symbols that you use. That means, if you fail to explain all the symbols used in your solution, you will receive a zero.

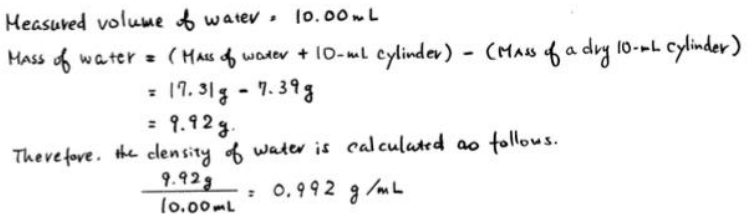
3. Concrete Example of the Grading Rubric

Please refer to **"General Grading Information"** outlined on page 3 of the Syllabus. When you start an experiment and prepare your lab report, you should always adhere to the terms of **"Lab Grading Rubrics"** explained on Page 5 of the Syllabus.

Example: "Calculate the density of water by using the data you collected in this measurement. Show your work. (10pts)"

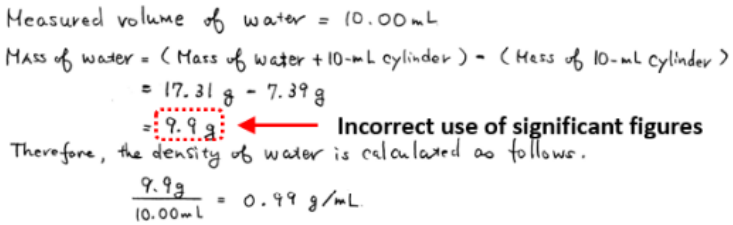
- **Part A:** You will enter the answer in the designated area in LabFlow which will be automatically evaluated for: the correctness of the answer (2pts), the correct use of significant figures (1pt), and the proper use of unit (1pt).
- **Part B:** You will need to upload a picture of your work to communicate clearly and logically how you reached the solution and your solution will be manually graded by your coach (6pts).

Scenario 1: The student gets full 10 points (**4pts from Part A** + **6pts from Part B**)



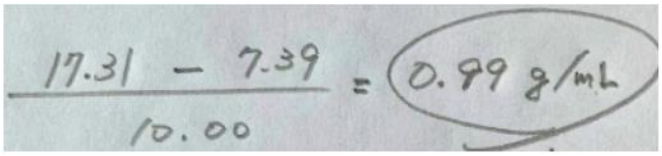
- The correctness of the answer. **(2pts)**
- The correct use of significant figures. **(1pt)**
- The proper use of unit. **(1pt)**
- The answer correctly shows how the student reached the solution, corresponding to the entered value in LabFlow. **(2pts)**
- The logic makes sense with respect to the question as the student showed her/his work. **(2pts)**
- The solution is communicated in a way that does not require guessing. **(2pts)**

Scenario 2: The student gets 9 points (**3pts from Part A** + **6pts from Part B**)



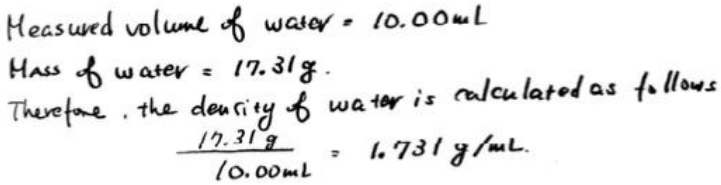
- The correctness of the answer. **(2pts)**
- The number of significant figures was incorrect. **(0pt)**
- The proper use of unit. **(1pt)**
- The answer correctly shows how the student reached the solution, corresponding to the entered value in LabFlow. **(2pts)**
- The logic makes sense with respect to the question as the student showed her/his work. **(2pts)**
- The solution is communicated in a way that does not require guessing. **(2pts)**

Scenario 3: The student gets 3 points (**3pts from Part A** + **0pt from Part B**)



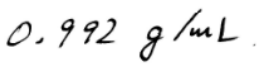
- The correctness of the answer. **(2pts)**
- The number of significant figures was incorrect. **(0pt)**
- The proper use of unit. **(1pt)**
- The student did not explain what equation was used in the solution. **(0pt)**
- Although work was shown, the student did not explain anything in the calculation. **(0pt)**
- The solution lacks clarity. A reader needs to guess the numbers and the equation used in the calculation. For example, what does "10.00" represent in the answer? Why are you subtracting two numbers in the numerator? Why are you dividing the numbers? Why are you circling "0.992 g/mL"? The units suddenly appear in the answer only at the end of the calculation. **(0pt)** As explained before, the student did not receive full credits from merely getting the correct answer, without communicating her/his thoughts and logic properly.

Scenario 4: The student gets 3 points (**1pts from Part A** + **2pts from Part B**)



- The answer was incorrect. **(0pt)**
- The number of significant figures was correct as the answer was incorrect. **(0pt)**
- The proper use of unit. **(1pt)**
- The question is not answered correctly because one part of the solution is incorrect. **(0pt)**
- The mass of water is calculated incorrectly in the equation. **(0pt)**
- The solution is communicated in a way that does not require guessing. **(2pt)**
- Although the students did not have the correct answer, she/he received partial credits from using the correct unit and trying to communicate her/his thoughts and logic properly.

Scenario 5: The student gets 4 points (**4pts from Part A** + **0pt from Part B**)



- The correctness of the answer. **(2pts)**
- The correct use of significant figures. **(1pt)**
- The proper use of unit. **(1pt)**
- The student did not show work when required. **(0pt)** As explained before, the student did not receive full credits from merely getting the correct answer, without communicating her/his thoughts and logic properly.