

## CHEM 1A Syllabus

<b>Instructor:</b> Rose Wang <b>Lecture:</b> MW 6 – 7:15 pm in Room SC 1102 <b>Lab:</b> MW 7:30 – 10:20 pm in Room SC 2202 TTh 7:05 – 7: 30 pm in Room 2202 <b>Email:</b> <a href="mailto:wangxiao@fhda.edu">wangxiao@fhda.edu</a> & <a href="mailto:wang932@yahoo.com">wang932@yahoo.com</a>	<b>Course Website:</b> Section 61 and 62: 61: <a href="https://deanza.instructure.com/courses/26612">https://deanza.instructure.com/courses/26612</a> 62: <a href="https://deanza.instructure.com/courses/26613">https://deanza.instructure.com/courses/26613</a>
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**This syllabus is a contract, please read it carefully.**

### PREREQUISITES:

A “C” or better in Chem 25 or 30A, or satisfactory score on Chemistry Placement Test. Math 114, 130, or equivalent (Intermediate Algebra)

### COURSE DESCRIPTION:

This course is the first quarter of a three-quarter, one-year sequence in general chemistry (Chem 1). The course covers the fundamentals of chemistry, focusing on atomic and molecular structure, chemical composition and reactivity, and quantitative analysis and stoichiometry, chemical reactions, thermochemistry, quantum theory, electron configurations. The lab is an introduction to the basic methods of chemical experimentation with a strong emphasis on quantitative chemistry. Key experiments include both acid-base and redox titrations and gravimetric analysis of a hydrate.

### REQUIRED MATERIALS:

- 1. Text:** *Chemistry: The Molecular Nature of Matter and Change, 9e*, by Silberberg (McGraw Hill: 2021, ISBN 978-1-307-60094-0). To save money, you could buy old copy from Amazon, eBay, or a former student. If you like to buy the old edition, it is fine.
- 2. Computer and printer access:** Although this is not an online course, you need to use computer to access canvas materials, to make excel graphs, to print out our blank labs, etc.
- 3. Lecture Handouts:** The pdf chapter slides will be available ON CANVAS (module 2) at directly after lecture or before lecture. Also, **you could use the PPT from the textbook on Canvas (module 8).**
- 4. Chem. 1A Lab Manual:** You could access each blank lab through our Department website <https://www.deanza.edu/chemistry/Chem1A.html> or through our course Canvas (module 3). **You need to print out each blank lab before you come to the lab room!**
- 5. A scientific calculator** is recommended for lecture and lab. During the exam time, you are only allowed to use a scientific calculator. Programmable calculators are not allowed for tests.
- 6. Laboratory Notebook** by Hayden-McNeil Carbonless (Bookstore). Or most College-ruled notebooks that contain copy pages, since you need to turn copy pages to instructor.
- 7. Lab Goggles** Eye protection is an essential PPE. **Students need to buy safety goggles for chemistry courses.** In lab room there are some goggles for students to borrow, if you use the goggles in the lab room, you need to clean them before using them since they are shared in whole room. You could buy your own goggles if you want, and keep them in your locker.

### OPTIONAL MATERIALS:

- Student Solutions Manual and Student Study Guide for lecture text. Silberberg.

- Inexpensive flash drive memory to store data from lab.
- Old clothes for lab or Lab Coat.

### ADD/DROP POLICY:

Due to safety policies for the chemistry labs, **enrollment in each section of general chemistry is strictly limited to 30 students with no exceptions whatsoever**. Students on the wait list may attend lecture until the add deadline passes to attempt to add into the course but could not attend wet labs.

Students who are waiting to add need to be sure to attend the class.

For any students do not attend the first day of class and lab, *I am required by contract to drop you from the course*, unless you inform me in writing as to why you were absent.

### ATTENDANCE:

This is a fast-paced and challenging course, attending the class and lab regularly will help you to understand the material and pass the class. Students are expected to attend all lectures and lab sessions. You are responsible for all the material covered in this course. You should also exchange contact information with a few classmates who you can contact regarding material missed if you must be absent. Since this is an experimental course, your presence in the laboratory is essential for the understanding of the materials covered. **Missed lab work WILL NOT be excused nor made up.** You may NOT receive a passing grade if **more than 1** unexcused lab absence is counted. Allowances may be made for emergencies. **Please show me the documents as the evidence of an emergency.** *It is students' responsibility to drop the course officially if desired (Note: Before you drop the course, please check out of the laboratory.)* In order to help you to pass this difficult course, I will check the attendance regularly to help you stay with this difficult course. With good participation, the passing rate and students' grades would be higher. We will try to achieve good results as a whole group!

### GRADING POLICIES:

#### Overall Course Grade

	pts	%	
3 Lecture Exams (3x100)	300	30	
Final	200	20	
Homework	100	10	Drop the lowest one
Canvas Discussion (5x5)	25	2.5	
Pop Quizzes (5x14)	70	7	Drop the lowest two
Prelab in notebook (5x8)	40	4	
Lab Report (15x10)	150	15	Drop the lowest one
Lab Quizzes (3x30+5)	95	9.5	
Subjective lab & lecture	25	2.5	
		100.5%	0.5% Bonus in lab quiz

**A letter grade will be assigned according to the following percentage scale and categories:**

A+ ≥97%	A ≥92%	A- ≥88%	B+ ≥86%	B ≥81%	B- ≥78%
C+ ≥75%	C ≥67%	D+ ≥64%	D ≥60%	D- ≥56%	F <56%

1. Precise cut-offs may differ by  $\pm 1\%$  of the above listed numbers, and are determined only after all points for lecture and laboratory have been totaled.
2. You must take the final exam to pass the course. If you miss the final exam scheduled for this course, then you will not receive an overall passing grade. There are no make-up exams for the final exam.
3. If your average exam percent, or your average lab percent is less than 55% you WILL NOT receive a passing grade.
4. In order to be fair to all students, advance or make-up exams will NOT be given.
5. A grade of F is also given for cheating or for being disruptive during the lectures or labs.
6. *In order to encourage you to do better, if your comprehensive final is higher than your lowest midterm %, I may consider using your final % to replace 50% of your lowest midterm to help you get more points 😊.*
7. **Incomplete grades** are only given for extenuating circumstances; for example, verified illness or legitimate emergencies. If an incomplete is given all exams and lab work prior to the incomplete are still counted in your grade, only material that has not yet been completed can be made-up in the future. **You must be passing the course to receive an incomplete grade.**

Many pop quizzes will be given during the quarter. Pop quizzes could be distributed at any time. Usually I may distribute the pop quizzes at the beginning of the class. Pop quizzes are open book, open notes, and open discussions with limited time. Pop quiz time is about 5 to 15 minutes. ***You have to stay in the class all the time and solve the quiz questions correctly to get the full scores for pop quizzes.*** Pop quizzes will help you to understand the materials just learned in lecture and lab, also they will help students to have good participation in the class, thus to help you pass this difficult course with good grades. **Besides 7% scheduled pop quiz scores, I'll distribute around 1% extra credits in pop quizzes.** Two pop quizzes are dropped during the quarter. I may distribute around 2.5% extra credit in exams as well.

**Please note that the instructor will NOT provide extra credit work at the end of the semester for students who are doing poorly. Thus, you need to perform well in your tests, quizzes, and lab reports, etc.** If you follow all rules, have good participation (means attend all lecture and lab, finish all prelabs, lab reports, assigned homework questions and discussions, etc.) and your score is within 1.0% lower than the cuts, I'll give those students 1.0% consideration when I assign the grades 😊.

## EXAMS AND LAB QUIZZES:

There will be three midterms during the lecture times and a final. There are three lab quizzes during the lab times. Please see all dates and times in the schedule on last page and in "Important Dates" section of syllabus. You need to bring a picture ID to all exams. Seats will be assigned during the lecture exams and lab quizzes. For lecture exams and final, please bring scantrons.

## IMPORTANT DATES:

<b>9/26 (Mon)</b>	Class Begin
<b>10/9 (Sun)</b>	Last Day to drop for Refunds and without a grade. If you stop attending during this time I may drop you. But it is better you drop the class.
<b>11/18 (Fri)</b>	Last day to drop the class with a "W" grade. After midnight on this date, you CANNOT receive a "W", you WILL receive a letter grade.

### LECTURE AND LAB EXAM DATES:

Lecture Exam	Date/Time	Coverage***
Exam 1 (Week 4, Wed.)	10/19 during Lecture Time	Ch-1,2,3
Exam 2 (Week 8, Wed.)	11/16 during Lecture Time	Ch-4,6
Exam 3 (Week 11, Mon.)	12/5 during Lecture Time	Ch-7,8,9
Final Exam (Week 12, Mon.)	12/12 From 6:15 pm to 8:15 pm in Lecture Room	Comprehensive for all chapters we have learned, and Lab 9,10,11
Lab Quiz	Date/Time	Coverage***
Lab Quiz 1 (Week 3, Mon/Tue)	10/10 & 11/11 in Lab Room	Lab 1,2
Lab Quiz 2 (Week 7, Wed/Th)	11/9 & 11/10 in Lab Room	Lab 3,4,5,6
Lab Quiz 3 (Week 10, Mon/Tue)	11/28 & 11/29 in Lab Room	Lab 7,8

\*\*\*Note: Exact Chapter and Sections Coverage may vary depending on pacing of course \*\*\*

### HOMEWORK:

10% of your grade will be based on homework. I will assign homework problems for each chapters. I am working on that, and I will provide questions chapter by chapter into module 1 in the canvas. You need to print out the homework, and after finish the homework, you need to upload it into Canvas according to the deadlines suggested on the last page of the schedule. *In Canvas, the due dates are already extended to the homework due dates to the exam dates (due times are around 5 pm of exam dates before the exams).* Most homework questions are multiple choices, **for calculation questions, you need to select the choice AS WELL AS WRITE SET-UP'S TO SHOW CALCULATION PROCESS, and for explanation questions, YOU NEED TO DO EXPLANATIONS on homework sheets.** I will drop the lowest homework score.

- **Please do homework as soon as we cover the materials in class** though the due dates are extended.
- Please also go over all examples in each chapter.
- Keep in mind that if you do not work the problems or just copy the answers from the back pages of your text, it is difficult for a student to be successful in the course and exams.

### ACADEMIC INTEGRITY:

All students should be aware of the De Anza College policy on academic integrity outlined at [https://www.deanza.edu/policies/academic\\_integrity.html](https://www.deanza.edu/policies/academic_integrity.html). The following text is reproduced from the De Anza College manual:

*The college is committed to providing academic standards that are fair and equitable to all students in an atmosphere that fosters integrity on the part of student, staff and faculty alike. The student's responsibility is to perform to the best of his or her potential in all academic endeavors. This responsibility also includes abiding by the rules and regulations set forth by individual faculty members related to preparation and completion of assignments and examinations.*

Academic dishonesty includes but not limited to:

- Plagiarism (copying or allowing someone to copy) lab exercises or reports. But you could discuss report results and how to solve the problems to enhance your understanding of the materials.
- During an exam, communicating or transferring information to another student, casual glances at your neighbor's paper, providing or receiving assistance, and/or consulting unauthorized materials.
- Having another person complete and submit work in your name.
- Lying to an instructor to improve your grade.
- Altering a graded work after it has been returned and then submitting the work for regarding.

#### Consequences of academic dishonesty may include:

- A report of the violation to the Dean of Student Affairs and Activities; this office keeps a record of students who have engaged in academic dishonesty. Repeated violations may result in administrative action including probation, suspension or expulsion from the college.
- You may receive an F grade on the work involved; this may also result in an "F" in the course.
- Verified cheating on the online homework will result in a score of 0% being given for the homework grade.

#### **RESOURCES:**

1. **Your peers!** It's been shown that working in groups is a GREAT way to process material. Helping others to learn is a wonderful way to solidify your own understanding. Asking each other questions, explaining difficult concepts and working together on the practice problems will all help immensely! I **HIGHLY** recommended forming some sort of study group – try to exchange contact information and meet for a bit each week to synthesize material.
2. **Tutoring:** De Anza's tutorial center is currently closed, but online services are available. Check at <https://www.deanza.edu/studentssuccess/onlinetutoring/>. Other campus services can be found as part of the student success center as well: <http://www.deanza.edu/studentssuccess>
3. **Disability Support Program and Services:** DSPS can help you get the right tools to succeed. Please check their website for current services and assistance: <http://www.deanza.edu/dsps/>
4. **Office Hours:** Come by to talk about lecture, homework, textbook material during the office hours. I put my office hour before lecture in lecture room and before lab in lab room to be sure that students could reach me easily.
5. **Textbook** – If you don't have textbook, please check if a copy of the textbook are on reserve at the library. But I recommend you to buy any version (early version would be cheaper) of used textbook, since the materials are similar, except homework question numbers may different.
6. **Solution Book** – It will be very helpful. A used one is cheap. Especially if you need to continue taking chem 1B and 1C here, it will be very useful!
7. **Discussions in Canvas** – During the Covid time I opened discussions (with scores) for students during a quarter before each lecture exam. The past survey results showed that students like them. So I put 2.5% discussions in grade this quarter. Hope you will like it (see discussions in Canvas module 4.)

#### **CLASS RULES AND REGULATIONS:**

- Arrive on time. I will help you to be on time by distributing the pop quiz at the beginning of the lecture.
- Turn off or turn to silent mode all cell phones and electronic messaging devices. DO NOT talk on the phone or receive/transmit text messages during lecture or lab.
- Follow all written and verbal instructions.

- Laptop computers may be used during class **ONLY** for class business. For instance, you may use your laptop to view and/or take class notes, but please do not disrupt/distract your fellow classmates by using your laptop during class for other business and/or activities that do not pertain to the class. The instructor and the school are not liable for any damage to electronic equipment used during class.
- I will drop any student who, in my judgment, is habitually disruptive or disrespectful. Repetitive disruptive or rude behavior will be cause for dismissal from the class.

**STUDY STRATEGIES:** This is a very difficult and fast-paced class. How could you be successful?

**Success in the course = practice, practice, practice!**

1. **You should study outside of class AT LEAST 10 hours per week** for a 5-unit class to keep up with your reading, homework exercises, notebook preparation, lab reports, etc. Be sure to make the study time count by removing distractions—for instance, do not watch television or carry on conversations while studying.
2. Read (or at the least skim) the corresponding chapter in the text **BEFORE** lecture (*you could use module 8 PPT slides*). Keep the questions in mind and pay attention during the lecture time so you may get the answers for the questions that previously you don't understand.
3. Don't fall behind! Keep up with the reading and the recommended textbook problems! My strategy to help you is keeping a pop quiz each time.
4. **Attend the class and lab on time so you have chance to take the pop quizzes. It's quite hard to catch up if you miss the lectures and labs.**
5. Take scratch paper each time for the lecture. I hope you could participate in the problem solving actively in class. Frequently sketching the problem solving process on the scratch paper would be a good habit.
6. Before each exam, I open a discussion forum in Canvas for 5 pts. 2.5 pts is for you to post a difficult question, and another 2.5 pts is to answer another student's question with explanations.
7. Ask questions! Come to office hours, tutoring, or form a study group to get them answered! It's **YOUR** responsibility to **take charge of your learning**; there are many resources to help you succeed!

### **COURSE OBJECTIVES:**

- A. Examine contributions by investigators of diverse cultures and time to the body of chemical knowledge, with an emphasis on physical and chemical conceptual frameworks.
- B. Investigate critical aspects of measurement.
- C. Explore the historical development of understanding the structure of the atom.
- D. Assess the development of the periodic table of elements in light of modern atomic theory.
- E. Differentiate the causes and types of chemical bonding.
- F. Appraise the effect of quantum mechanics on formulation of molecular structure.
- G. Employ systematic nomenclature to the identification of molecules.
- H. Utilize the principles of stoichiometry to analyze compounds, chemical mixtures, and reactions.
- I. Examine the prominent characteristics of solutions.
- J. Classify the major types of chemical reactions.
- K. Apply the essential principles of thermodynamics to chemical systems.

**Chemistry 1A is considered to be a very difficult course. You have to put much time to study really hard to pass the course or to get a good grade. I wish you have good luck with Chem. 1A this quarter!**

## Chemistry 1A Lab Syllabus

- ◆ **CAREFULLY** read the attached DeAnza Chemistry Department laboratory policies and safety and housekeeping rules.
- ◆ You must complete and turn in the Student Contract (provided by instructor) by the second lab meeting.
- ◆ You will not be allowed to attend lab until the Contract is signed and turned in.

### REQUIRED LABORATORY MATERIALS

1. **Chem 1A Laboratory Experiments and Handouts:** available in CANVAS (module 3) or you could get from the department website: <https://www.deanza.edu/chemistry/Chem1A.html>
2. **Laboratory Notebook** by Hayden-McNeil CARBONLESS (Bookstore) or most College-ruled notebook will work. Do not purchase a notebook with BLUE pages – too hard to read! You need to turn the copy page to me as prelab at the beginning of the lab.
3. A scientific **calculator**. During the exam time, graphing calculator is not allowed.
4. OSHA-approved **Safety Goggles**. You may purchase it in bookstore.

### OPTIONAL LABORATORY MATERIALS:

1. Lab Coat
2. Disposable nitrile gloves

### LABORATORY PROCEDURES AND POLICIES

All students are expected to **arrive to lab on time** and to come to lab prepared to carry out the experiment scheduled for that session. This means that you have studied the experiment for the day, have a basic understanding of its purpose and procedure, the chemistry involved and *have prepared your laboratory notebook for the experiment prior to the start of lab*. I ask that all students do a conscientious and thorough job of cleaning up after themselves, whether it is in their own work area in the lab, or shared areas such as the chemical supply table and balance room.

### LABORATORY LECTURE

The beginning of each laboratory session is designated as a laboratory lecture period for which you **must be on time** in order to perform the scheduled experiment. The instructor will use this lecture period to outline important details of the procedure, overview theory and calculations, and discuss common safety hazards and proper chemical disposal techniques. *Being late for the beginning of lab will result in a penalty to the grade for that lab assignment.*

### LAB ATTENDANCE

Attendance in the laboratory is **mandatory**. I will be taking roll in the lab each time at beginning. And I will sign off the data page before you leave the lab. If you miss one lab time (not one lab), you will lose that portion of score. You may not have chance to understand the materials if **more than 1 absence** is counted. I may allow for emergencies and other complications in life. You need to submit the document for verification.

Additionally, do not plan on leaving lab early. Labs will regularly take the total amount of time allotted.

## TARDINESS:

Students have to be on time in the lab for full lab credit. You are counted as tardy if you arrive more than 5 minutes late. Each tardy will deduct 2 points from your lab notebook preparation. **If you are more than 15 minutes late, you will not be allowed to perform the experiment for that day, and will be counted as absence.**

## LAB SAFETY

**Being safe in the lab is a top priority.** The importance of safety in the laboratory will be focused upon during the first day of classes. **Students who are absent for this essential lab period will be dropped from the course.** During the quarter, any unsafe behavior, intentional or not, will be noted and may be cause for dismissal from the course. For your protection, **safety goggles must be worn AT ALL TIMES as long as one student is still doing the lab and have chemicals in the lab bench.** One or two warnings will be issued to any student that is observed wearing their goggles on their forehead, hanging them around their neck, etc. instead of wearing over their eyes. If the warnings are disregarded or ignored repeatedly, points will be deducted or expulsion from the lab may result with zero credit. **Students need to purchase Safety goggles!** Those students with prescription glasses will be required to wear safety goggles over their prescription glasses. [We will watch the safety video together in the first meeting. You also could watch it again and watch more safety videos at home to prepare for the safety quiz: <https://www.youtube.com/watch?v=3ELbwzqyuh8>, <https://www.youtube.com/watch?v=9o77QEeM-68>, <https://www.youtube.com/watch?v=JrlEc7rX2r4&t=131s>, <https://www.youtube.com/watch?v=HLaOJKD9iDg&t=781s>, <https://www.youtube.com/watch?v=ALBWxGik64A> etc.](#)

## PRELAB (NOTEBOOK PREPARATION):

You have to read the lab materials before you come to lab. Prepare your notebook for each experiment before the start of the lab lecture. If you prepare your notebook in advance, the lab will go much more smoothly, and you will not lose valuable lab points!

**BEFORE COMING TO A LAB MEETING, complete the following entries in your notebook in PEN:**

*The date, your name, title, list of reagents (including concentrations), safety, and procedure (try not "cut and paste" this information from the lab packet).* **At the beginning of the lab, please turn the duplicate page(s) to me.** The pages will be marked and graded for 5pts each.

*Prelab is safety related item. It is important to finish prelab before you come to the lab. If you do not do the prelab, you will not allowed to perform the lab work!*

## LAB REPORTS:

Many lab reports will be due **one week after** you finish the experiment. Worksheet might be due in the same day or in the next lab period. There will be **20% deduction for each late day.** You will receive a grade of zero for lab reports that are more than one week late. The report is due **at the beginning of the lab meeting.** A laboratory report is considered late if not received **by me in person** on the day and time it is due. Although for most experiments you will be working with one partner, **everyone must**



**turn your own report each time.** You are encouraged to discuss lab questions and results with your partner and other group students to enhance the understanding of the experiments. Please don't copy other students' report and please don't use your lab partner's excel graph, you need to make your own graph.

**DURING THE LAB:** You need to continue notebook recording **in ink!**

- During the lab lecture, record some background notes and/or principles in your notebook.
- Record your lab data and observations **directly to notebook**, then transfer to your report page.

**Points will be deducted if you forget to bring your notebook to the lab, if you write in pencil for the lab results, or if you record data on scratch paper.**

**You need to let me sign your notebook for this part before you leave the lab.**

**FOLLOWING THE LAB:** After the lab, you need to finish the Data Analysis and Post-lab Questions in data pages and report pages. **You do NOT do these parts on notebook, so no need to use pen (pencil is OK)**

Lab report that you submit should include:

1. All note book pages (copy pages that include prelab and lab data signed).
2. Data analysis and/or graphs.
3. Post lab questions if there are any (in printed out paper).

## LABORATORY GRADE

Your laboratory work will comprise 18% of your overall grade (not include lab tests) in this course indicated below:

	pts	%	
Prelab in notebook (5x8)	40	4	
Lab Report (15x10)	150	15	Drop the lowest one
Lab Quizzes (3x30+5)	95	9.5	
Subjective lab & lecture	10	1	
Total	295	29.5	0.5 % bonus in lab quiz

You will be deducted 2 points for every tardy to lab section (5 minutes or more late to class). **If you fail the laboratory portion of this course, you will not receive an overall passing grade.**

## CHEMICAL DISPOSAL

As a concern for the environment and to follow county, state and federal law, proper chemical disposal is essential. Check with the instructor if you have any questions. A student who repeatedly fails to comply with directed safety and/or chemical disposal procedures will be deducted the score in the lab report, and may be dropped from this course.

## CLEAN UP

You must clean up your lab area and put the equipments back at their storage locations after the experiment. If you spilled a bit of chemicals at the reagent area, you **must** clean it up immediately, and put the chemicals into the waste bottle. If you do not do clean up, your lab performance grade will be low. If you have a large reagent spill, you need to report to your instructor to get help to do clean up.

**CHECK-OUT** Check-out occurs at the last lab session. If a student drops the course, he/she **must check out during his/her regular laboratory section meeting with his/her lab instructor or come to the last lab session (11<sup>th</sup> week) to check out.**

**Good Luck with the Chem1A Labs and have fun!**

## How to Keep a Lab Notebook

### Notebook Rules

1. Lab notebooks are bound (pages tied and glued together so that they are not easily removed. They are also numbered on every page, so again it is difficult to add or remove pages without this being obvious.
2. **All notebooks records are kept in ink.** Mistakes in a notebook should be lined out with a single line, never covered with Whiteout or similar products, nor scribbled over to obscure the original notation(s). This generates a permanent non-changeable record of the work done. This is crucial! If you ever work in a laboratory, you must NEVER erase, whiteout, cover over, or remove any mistakes or data. If you did so, this would be classified as data falsification and you could be fired, as well as face fines and criminal prosecution.
3. All notebook pages must be dated and should also have the title of the experiment being carried out on it.
4. **All notebooks should have a table of contents** for the work done. The traditional place for a table of contents is in the front of the book. Many notebooks will include a space for a table of contents. If yours doesn't, **leave the first 3 pages blank** and construct your own.
5. Ideally, all parts of a lab are written directly into the notebook. In this class however, I will not be requiring you to attach all your graphs and conclusions to your notebook. Some of your work may be done on separate paper and turned in as your final report. Be sure to refer to the next page in order to ensure that you have the right sections in your notebook. All your data must be recorded in your notebook.  
**If you record your data into the manual or on a piece of paper, THIS is your original data and it MUST be taped or glued into your lab notebook. Although you may recopy your data in your notebook in a neat table, your ORIGINAL data must also be there!**
6. For every experiment, in addition to a title, there should also be a "Purpose", a short background introduction, a Chemicals and Equipment section, a Safety and Waste section, a Procedures section, an Observation/Data Collection section, and a Data Analysis section. Formal reports will also include a Discussion/Error Section and a Conclusions section. The following page shows the required order for these sections in the notebook.
7. **The following sections must be included in your notebook: Title, Purpose, Chemical/Safety Equipment, All Pre-Lab work, Procedure, Data, and Calculations.** All other sections, including Graphs and Tables, Discussion/Errors, Conclusion and Post-lab Questions may be done on separate pages.

### Order of Sections for a Lab Notebook

Title

*Purpose* This is a sentence or two on why you are conducting the lab: what are the objectives. (*What you want to do/prove*) **This is part of the pre-lab write up.**

*Introduction/Background* This is a brief explanation of the theory and practice the lab is based on. It demonstrates your understanding of what we are doing and what we will learn from it. It should be 1-2 paragraphs long. (*What are you basing this experiment on*) **This is part of the pre-lab write up**

*Chemicals/Safety/Equipment* All equipment & chemicals are listed here with basic chemical safety info (including **basic hazard info** like is it flammable, corrosive, etc; **handling and safety precautions** like use only in the hood or keep away from open flames; and **emergency/first aid info**) on all the chemicals being used. Read the procedure to get all the chemicals & equipment used. This can be a table or a paragraph. (*What you need to think about as you're doing the experiment*) **This is part of the pre-lab write up.**

*Pre-lab Calculations* Any assigned pre-lab calculations are to be completed in your notebook prior to beginning any lab. This section is not common but do check! **This is part of the pre-lab write up.**

*Procedure* Reference the procedure in your lab notebook and then write down any changes to the procedure in enough detail so others reading the notebook could repeat the lab with the changes. (*What you did.*) **This is part of the pre-lab write up.**

*Data Tables* Data, including masses, times, observations, spectra, temperature, color changes, absorbance readings, etc. go here. Be sure to include units of measurement and significant figures and any required experimental conditions (time, temp.). (*What you observed.*) **Your pre-set data tables are part of the pre-lab write up.**

*Data Analysis (Calculations)* This is where you perform calculations and attach graphs. Show all calculations and equations. Some labs require you to do some data analysis as you collect the data, but you still need to have a separate Data Analysis Section. Data Analysis may be recopied as it is not raw data. (*What you can get out of your data*)

*Discussion/Errors* This is where you interpret your data and data analysis, compare experimental data to known results, and explain errors and possible errors. (*What your data means*)

*Conclusion* This is a summary of the experiment and its objective, your important data, important data analysis results, your data analysis interpretation, comparison to known values, and errors. Remember to put numbers here as well as explanations on errors. *Important: The Conclusion is a rewording or restatement of everything which is already found in your report (except perhaps a personal opinion on how you could improve the lab to obtain better results).* (*What you accomplished*)

*Post Lab Questions* If there are any post lab questions, they get put here.

**A Copy of Prelab worksheet will be turned in at the start of lab. If you have not completed prelab, you could not start a lab. So be sure always prepare before lab! Being on time is worth points!**

## Some tips on preparing your notebook:

1. Make sure your name and the experiment title are on each prelab, lab data page. If you work with a lab partner, please write lab partner's name as well.
2. Make sure your data collection pages are neat and your records legible.
3. **Make sure all chemicals needed are listed with the necessary concentrations.**
4. What glassware to be used can usually be streamlined in the procedure. Specifying the size of a test tube or beaker is often not necessary.
5. For the procedure DO NOT INCLUDE ANY OBVIOUS "HOW TO" STEPS. ONLY INCLUDE "WHAT TO DO" STEPS. For example, if the procedure calls for preparation of 25 mL of 0.050 M NaOH solution by dilution of 0.10 M NaOH do not include the steps involved to prepare the pipet (i.e. washing, rinsing with solution to be pipetted). Your notebook simple needs to read: "Prepare 25 mL of a 0.050 M NaOH solution by dilution from a 0.10 M stock solution." For this example, you should also record the volume of the 0.10 M solution used and the type of glassware used (i.e. pipette, volumetric flask, etc.).
6. OMIT ALL REFERENCES TO SPECIFIC LABQUEST PROCEDURES. The LabQUEST Guide is always available as a reference. Simply state what to do. For example, "Calibrate the pH sensor using pH 4 and 10 buffers." Would be an adequate step for using pH sensors.

## CHECK LIST FOR COMPLETED LABORATORY ASSIGNMENTS/REPORTS

1. Write your name on the first page. **All loose papers must be stapled together!** (No paper clips, no bent corners, etc.) Loose papers will not be accepted and if you do turn them in, points will be deducted! Turn-in only what is asked for, no extra pages.
2. The lab report or assignment should be neat. Lab reports could be completed neatly in pencil or pen. Mistakes during data collection should be crossed out with a single line (not erased!). All writing must be legible. On graphs, circle the points so they can be seen. **INCLUDE UNITS on all data, graphs, calculations, etc...!**

3. Unless otherwise notified by your instructor, all exercises and problems in a lab report or assignment must be completed for full credit. If you are having trouble solving a problem, see your instructor or school tutoring center for help. You also are encouraged to form a study group to do discussions. But do not try to copy each other's reports.

4. **In all calculations** show the **set-up with units!** If multiple trials are performed, you only need to show the set-up for the first trial.

5. All data must be recorded to the precision of the instrument. For example, never round the balance data. If you are unsure of the precision ask your instructor or refer the Measurements Lab (completed in class). For example, a buret reading where the meniscus falls exactly on 15 mL is recorded as 15.00 mL not 15 mL. The trailing zeros in the 15.00 mL reading are significant!

6. In your calculations use the rules of significant figures to determine how many significant figures your answer should contain. Review the rules for significant figures! Points will be deducted for every significant figure error. **Rules for Safe and Efficient Chemistry Laboratory Operations.**

## Safety Rules:

1. Prepare for each experiment by reading all of the directions before lab starts.
2. *Locate the Safety Equipment.* Know the locations of the eye wash, safety shower, fire extinguishers, fire blankets, first aid kit, fume hoods, telephone and all exits that are to be used in an emergency. Your laboratory instructor will describe the use of the safety equipment.
3. *Protect your eyes.* Wear approved eye protection at all times. Your laboratory instructor will inform you which of these you must have. Goggles provide maximum safety. Prescription glasses, if you need them, must be worn under approved eye protection. Contact lenses should not be worn in the laboratory because fumes may accumulate under the lenses and injure your eyes and the lenses make it difficult to flush chemicals from your eyes.
4. *Tie long hair back.* This precaution will keep your hair out of burner flames and harmful chemicals.
5. *Do not wear clothing with loose, flowing sleeves.* This precaution will keep your sleeves out of burner flames and harmful chemicals.
6. *Wear shoes that cover all of your feet.* Broken glass on the laboratory floor and spilled chemical reagents are all too common. Shoes that cover your feet completely will protect them from broken glass and chemical splashes. The best types of shoes are closed-toe made out of leather.
7. *Wear clothes that cover your torso and your legs to the knees.* Clothing will give your body needed protection. Good clothing can be protected with a lab apron or coat.
8. Do not eat or drink in the laboratory.
9. Do not taste any chemical reagent.
10. *Do not smell chemical reagents directly.* When you are instructed to smell a chemical, do so by gently wafting the vapors toward your face. Do not inhale deeply.
11. *Do not pipette solutions by mouth.* Use a rubber suction bulb to fill the pipette.
12. *Do not work with flammable liquids near a flame.*
13. *Do not engage in games or horseplay in the laboratory.* Never run in the laboratory.
14. Do not attempt unauthorized experiments in the laboratory.
15. Do not work in the laboratory in the absence of your instructor or his or her authorized representative.

16. Use a fume hood when required.
17. *Handle glass tubing and thermometers carefully.* When inserting glass tubing or thermometers through a rubber stopper, always hold the glass close to the stopper and use a lubricant such as glycerin to help the glass slide through the stopper. Do not continue to try to force glass through a stubborn stopper, get a new stopper and/or get help. When inserting a pipette into a pipette bulb, hold the pipette near the bulb and GENTLY insert the pipette.
18. *When diluting, never pour water into concentrated reagents.* Always pour the reagent into the water.
19. *If you spill a chemical reagent on yourself, immediately flood the exposed area with water and then summon the laboratory instructor. Inform the instructor immediately about any other accidents or spills.*
20. *Be aware of your neighbors. Are they obeying the safety rules?* A neighbor's accident may injure you.
21. *Avoid touching your face and rubbing your eyes while in the laboratory.* If you must do so, first wash your hands.
22. *Wash your hands before leaving the laboratory.*
23. *Never heat a closed container.* Pressure build up can cause the container to explode.
24. Assume any chemical is hazardous if you are unsure.
25. Do not violate any other safety rule issued by your laboratory instructor.

## Housekeeping Rules:

1. *Clean up broken glass immediately with a broom and dustpan. Do not use your hands.* Dispose of broken glass in the special container that is provided, never in a regular trash can.
2. *Chemical spills must be cleaned up immediately.* Immediately notify your instructor who will advise you how to clean it up and/or assist you. Dispose of the collected contaminated chemical properly as instructed.
3. *Do not pour any chemical down into the sink or in the trash without authorization.* Clearly labeled disposal bottles will be provided when needed.
4. *Take containers to the stock of chemical reagents.* Do not bring stock chemicals to your laboratory bench.
5. *Read the label on a reagent bottle carefully.* Is it the correct chemical? Is it the correct concentration?
6. Do not insert your own pipette, medicine dropper or spatula into a stock bottle.
7. *Use special care with stoppers or tops of stock bottles.* Do not allow them to pick up contamination. Your instructor will provide additional instructions for handling the stoppers or tops found in your laboratory.
8. *Always replace the stopper or top of a stock bottle when you are finished taking some of the reagent.* Make sure that you put the stopper or top back onto the correct bottle.
9. *When pouring liquid from bottles, hold the bottle with the label against the palm of your hand so that the liquid is poured from the side opposite the label.* If any liquid runs down the outside of the label, immediately wipe off the liquid.
10. *Do not take any more of a reagent than is required.* Many of the chemicals used in the laboratory, including deionized water, are costly.
11. *Never return any unused reagent to a stock bottle.* If you take too much of a chemical, dispose of it as directed by your instructor or offer it to a classmate who needs it.
12. Set up your glassware and apparatus away from the edge of your laboratory bench.
13. Thoroughly clean the area around your laboratory bench and the top of your laboratory bench before leaving lab.
14. *Keep shared areas of the laboratory clean.* This includes areas such as the balance room and where the stock bottles are stored. It is especially important to keep the balances clean and free of chemical spills.
15. *Keep your laboratory equipment clean.* Good results depend on clean equipment.
16. *If a piece of equipment containing mercury is broken, inform your laboratory instructor immediately.* Keep the area blocked off to avoid scattering the mercury.
17. Follow any other housekeeping rules given by your laboratory instructor.

## Chemistry 1A Lab Schedule Fall 22

### LAB MEETS TWICE A WEEK

WEEK	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
1	CHECK-IN	CHECK-IN	MEASUREMENT (NO PREP)	MEASUREMENT (NO PREP)
2	NOMENCLATURE (NO PREP)	NOMENCLATURE (NO PREP)	HYDRATE (1)	HYDRATE (1)
3	HYDRATE (2)	HYDRATE (2)	PRECIPITATION (1)	PRECIPITATION (1)
4	PRECIPITATION (2)	PRECIPITATION (2)	PRECIPITATION (3)	PRECIPITATION (3)
5	TYPES OF REACTIONS (1)	TYPES OF REACTIONS (1)	TYPES OF REACTIONS (2)	TYPES OF REACTIONS (2)
6	CONDUCTIVITY (1)	CONDUCTIVITY (1)	CONDUCTIVITY (2)	CONDUCTIVITY (2)
7	ACID-BASE TITRATION (1)	ACID-BASE TITRATION (1)	ACID-BASE TITRATION (2)	ACID-BASE TITRATION (2)
8	CALORIMETRY (1) (VERNIER)	CALORIMETRY (1) (VERNIER)	CALORIMETRY (2) (VERNIER)	CALORIMETRY (2) (VERNIER)
9	REDOX TITRATION (1)	REDOX TITRATION (1)	REDOX TITRATION (2)	THANKSGIVING
10	REDOX TITRATION	REDOX TITRATION (2)	LINE SPECTRA	LINE SPECTRA
11	MOLECULAR MODEL	MOLECULAR MODEL	CHECK-OUT	CHECK-OUT
12	FINALS	FINALS	FINALS	FINALS

Most lab reports are due one week after the labs are completed in the laboratory. Some exceptions will be announced ahead of time, such as a dry lab will be due next lab period or will be due at the end of the lab.

## TENTATIVE LECTURE AND LAB SCHEDULE:

Schedule is subject to change. I will announce the change in the class and/or in canvas announcement.

Date	Lecture (MT or WTh)	Mon. or Tue. Labs	Wed. or Thur. Labs
<b>Wk 1:</b> 9/26 – 9/29	<ul style="list-style-type: none"> <li>● Discussion of Syllabus</li> <li>● <b>Ch-1:</b> Keys to study Chem.</li> <li>● <b>Ch-2:</b> The Components of Matter ● <u>Pop quiz 1</u></li> </ul>	<b>Mandatory</b> <ul style="list-style-type: none"> <li>● Introduction /Safety</li> <li>● Lab notebook</li> <li>● <b>Check-in</b></li> </ul>	<ul style="list-style-type: none"> <li>● <b>Safety Quiz (Bring a Scatron!)</b></li> <li>● <b>Lab 1:</b> Measurement (No Prep)</li> <li><u>HW Ch-1 due on Sat.*</u></li> </ul>
<b>Wk 2</b> 10/3-10/6	<ul style="list-style-type: none"> <li>● <b>Ch-2:</b> continued</li> <li>● <b>Ch-3:</b> Stoichiometry</li> <li>● <u>Pop quiz 2 &amp; 3</u></li> </ul>	<b>Lab 2:</b> Nomenclature (No Prep)	<b>Lab 3:</b> Hydrate (1) <ul style="list-style-type: none"> <li>● <b>Notebook Prep. Due</b></li> <li><u>HW Ch-2 due on Sat.</u></li> </ul>
<b>Wk 3:</b> 10/10 -10/13	<ul style="list-style-type: none"> <li>● <b>Ch-4:</b> Chemical Reactions</li> <li>● <u>Pop quiz 4 &amp; 5</u></li> </ul>	<ul style="list-style-type: none"> <li>● Lab 3: Hydrate (2)</li> <li>● <u>Lab Quiz 1 (Lab 1,2)</u></li> </ul>	<ul style="list-style-type: none"> <li>● <b>Lab 4:</b> Precipitation (1)</li> <li>● <b>Notebook Prep. Due</b></li> <li><u>HW Ch-3 due on Sat.</u></li> </ul>
<b>10/9(Sun.)</b>	<u>Deadline to drop this class with a refund and without W</u>		
<b>Wk 4:</b> 10/17–10/20	<ul style="list-style-type: none"> <li>● Ch-4: Continue ● <u>Review*</u></li> <li>● <u>Exam 1 on Wed. (Ch-1,2,3)</u></li> </ul>	● Lab 4: Precipitation (2)	● Lab 4: Precipitation (3)
<b>Wk 5:</b> 10/24–10/27	<ul style="list-style-type: none"> <li>● <b>Ch-6:</b>Thermochemistry</li> <li>● <u>Pop quiz 6 &amp; 7</u></li> </ul>	<ul style="list-style-type: none"> <li>● <b>Lab 5:</b> Types of Rxns (1)</li> <li>● <b>Notebook Prep. Due</b></li> </ul>	<ul style="list-style-type: none"> <li>● Lab 5: Types of Rxns (2)</li> <li><u>HW Ch-4 due on Sat.</u></li> </ul>
<b>Wk 6:</b> 10/31-11/3	<ul style="list-style-type: none"> <li>● <b>Ch-7:</b> Atomic Structure</li> <li>● <u>Pop quiz 8 &amp; 9</u></li> </ul>	<ul style="list-style-type: none"> <li>● <b>Lab 6:</b> Conductivity (1) (Vernier)</li> <li>● <b>Notebook Prep. Due</b></li> </ul>	<ul style="list-style-type: none"> <li>● Lab 6: Conductivity (2)</li> <li><u>HW Ch-6 due on Sat.</u></li> </ul>
<b>Wk 7:</b> 11/7-11/10	<ul style="list-style-type: none"> <li>● <b>Ch-8:</b> Electron Configuration and Chemical Periodicity</li> <li>● <u>Pop quiz 10 &amp; 11</u></li> </ul>	<ul style="list-style-type: none"> <li>● <b>Lab 7:</b> Acid-Base Titration (1)</li> <li>● <b>Notebook Prep. Due</b></li> </ul>	<ul style="list-style-type: none"> <li>● Lab 7: Acid-Base Titration (2)</li> <li>● <u>Lab Quiz 2 (Lab 3,4,5,6)</u></li> <li><u>HW Ch-7 due on Sat.</u></li> </ul>
<b>Wk 8:</b> 11/14-11/17	<ul style="list-style-type: none"> <li>● Ch-8: Continued ● <u>Review</u></li> <li>● <u>Exam 2 on Wed. (Ch-4,6)</u></li> <li>● <u>Pop quiz 12</u></li> </ul>	<ul style="list-style-type: none"> <li>● <b>Lab 8:</b> Calorimetry (1)</li> <li>● <b>Notebook Prep. Due</b></li> </ul>	<ul style="list-style-type: none"> <li>● Lab 8: Calorimetry (2)</li> <li><u>HW Ch-8 due on Sat.</u></li> </ul>
<b>Wk 9:</b> 11/21-11/24	<ul style="list-style-type: none"> <li>● <b>Ch-9:</b> Chemical Bonding</li> <li>● <b>Ch-10:</b> Molecular Shapes</li> <li>● <u>Pop quiz 13 &amp; 14</u></li> </ul>	<ul style="list-style-type: none"> <li>● <b>Lab 9:</b> Redox Titration (1) ● <b>Notebook Prep. Due</b></li> </ul>	<ul style="list-style-type: none"> <li>● Lab 9: Continue</li> <li>● <b>Thur. Holiday, no lab</b></li> <li><u>HW Ch-9 due on Sat.</u></li> </ul>
<b>Wk 10:</b> 11/28-12/1	<ul style="list-style-type: none"> <li>● <b>Ch-11:</b> Covalent Bonding</li> <li>● <u>Pop quiz 15 &amp; 16</u></li> </ul>	<ul style="list-style-type: none"> <li>● Lab 9: Continue</li> <li>● <u>Lab Quiz 3 (Lab 7,8)</u></li> </ul>	<ul style="list-style-type: none"> <li>● <b>Lab 10:</b> Line Spectra</li> <li><b>Notebook due</b></li> <li><u>HW Ch-10 due on Sat.</u></li> </ul>
<b>Wk 11:</b> 12/5-12/8	<ul style="list-style-type: none"> <li>● Ch-11: Continued ● <u>Review</u></li> <li>● <u>Exam 3 –Mon (Ch-7,8,9)</u></li> <li>● <u>Review</u></li> </ul>	● <b>Lab 11:</b> Molecular Model	<ul style="list-style-type: none"> <li>● <b>Check-out</b></li> <li><u>HW Ch-11 due on Sat.</u></li> </ul>
<b>Wk 12:</b> 12/12-12/15	<u>Cumulative Final Exam on Mon. 6:15 to 8:15 pm</u>	Final Week, no lab	Final Week, no lab

\*All online homework due times are already postponed to the test dates. No further postpone will be given.

\* 10 – 15 min. review is scheduled during pop quiz time, it is for students to ask questions and/or for me to remind you about some writing questions. Similar as pop quizzes, students need to take a piece of blank paper to write down the review materials that we have covered, and submit it for pop quiz score.

**Student Learning Outcome(s):**

- \*Analyze and synthesize the concepts of limits, continuity, and differentiation from a graphical, numerical, analytical and verbal approach, using correct notation and mathematical precision.
- \*Evaluate the behavior of graphs in the context of limits, continuity and differentiability.
- \*Recognize, diagnose, and decide on the appropriate method for solving applied real world problems in optimization, related rates and numerical approximation.

**Office Hours:**

In-Person	SC2202	M,W	5:10 PM	6:00 PM
In-Person	SC2202	T,TH	7:05 PM	7:30 PM