

General Chemistry Laboratory I

CHEM 1102- Summer 2016

Instructors: Dr. Elvin A. Alemán and Dr. Koni Stone

Website: <http://www.csustan.edu/blackboard/>

<http://genchem1csustan.wikidot.com/1102-lab-schedule-summer-2015>

Office: N-357 (Alemán) N358 (Stone)

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Email: ealeman@csustan.edu , kkstone@me.com

Laboratory Time: Monday and Wednesday 1:00PM-4:00PM

Room: Naraghi Hall of Science 322 or N 301

Office Hours*: MW 10:00AM-11:30AM (Alemán); F 12pm-1pm (Stone)

**Appointments may be requested via email.*

Catalog Description

Course emphasizes atomic structure, periodic properties, theories of bonding, kinetic theory of gases, solution chemistry. Satisfies G.E. area B1. Corequisite: CHEM 1100 unless already completed with a CR or grade of C- or higher. Prerequisites: A grade of 50 or higher on the ELM, unless exempt, or completion of MATH 0110 or its equivalent with a C or higher grade. (Laboratory, 3 hours)

Required Supplies

1. Experimental procedures and background information will be available at Blackboard and the wikidot web page.
2. Safety goggles (must be worn at all times).
3. Laboratory notebook (will be provided the first day of class).
4. Scientific calculator
5. Combination or key lock.

Grading

Grade	Percent Range
A	100%-90%
A-	89%-88%
B+	87%-85%
B	84%-80%
B-	79%-75%
C+	74%-70%
C	69%-65%
C-	64%-60%
D	59%-50%
F	less than 50%
CR	≥70%
NC	less than 70%

The final grade of the course will be determined as follows:*

Category	% of total grade
Notebook	20%
Pre-Lab Notebook	20%
Reports	60%

**Subject to change at the discretion of the instructor*

You must complete **all the experiments** and **attend all of the pre-lectures** to pass this course.

General Chemistry Laboratory I

CHEM 1102- Summer 2016

Laboratory Notebook-Rules

The notebook will assist you in organizing your work. The notebook is a permanent record of your experimental procedure and data. The instructor will use your notebook to help identify problems in your experimental procedure, laboratory technique and calculations. A good notebook save you time and greatly improves the chances of receiving a **GOOD GRADE**. Each experiment will discuss the material to be included in your notebook and report. **ALL** entries in the notebook are to be done using a **ballpoint pen** (black or blue only). It is important that, as the course progresses, you develop the skills and discipline needed to become a good notebook keeper.

1. **Front Cover:** write “Your Name”, “CHEM1102-Summer 2016”, “Day-Time”, and “Instructor: Dr. Alemán or Dr. Stone”.
2. **Inside Front Cover:** write “Your email” and/or “Phone Number” to contact you if you lose your notebook.
3. Number every page of the notebook.
4. Leave the next two pages blank so there will be room for a detailed table of contents.
5. **Errors:** No original pages should EVER be removed from your laboratory notebook. If an error is made, draw a single line through the word and write your initials. No white out is allowed.

Laboratory Notebook-Format

As you begin to work in the calculations, data analysis, conclusions, and the write up of the experiment into a report, you should become conscious of the nature and quality of the notes that you kept while performing the experiment. Use plenty of room. The point is that you should not cram a lot of data and observations onto too-few pages. You should record not only all relevant numerical readings and specific information but also your thoughts and impressions. It is a good idea to write down questions as they occur to you during the experiment.

For each experiment you MUST have the following in your notebook, in the exact order in which they are presented here.

- I. **TITLE:** Include the title of the experiment, the number of the experiment, the date and the name of your partner if you had a partner in the experiment.
- II. **PURPOSE:** write two to three sentences briefly describing what are you doing and how you are doing it.
- III. **PROCEDURE:** handwrite the procedure in your own words. Do not copy-paste the given procedure. Include equations for the principal reactions that occur. Identify the steps required and the data you need to collect.
- IV. **PRE-LAB NOTES:** leave 1-2 pages for notes to be taken during the pre-lab lecture.
- V. **RAW DATA:** organize your notebook in advance with tables and other information to be collected. This section will contain all the measurements (e.g. masses, volumes, temperatures, time, pressure, etc.) that you will obtain during your lab practice. **ALL DATA** and observations must be recorded, in ink, immediately into your notebook.

General Chemistry Laboratory I

CHEM 1102- Summer 2016

Label all entries with proper units and use the correct number of significant figures in all the values.

The first five sections (I-V) MUST be prepared before you come to the lab!!! You will not be allowed in the laboratory if they are not prepared.

Instructor's Initials

- VI. **OBSERVATIONS:** In addition to the information recorded in the tables prepared in Section V, record everything that you can see, smell, and hear. For example, color changes, smell during a reaction, formation of a precipitated, release of heat, etc.

The sections IV-VI are to be completed during the lab sessions.

Instructor's Initials

- VII. **CALCULATIONS:** you MUST show equations for each calculation used in the experiment. Record all calculations in your notebook, no matter how simple or repetitive the calculation may be. Use the correct number of significant figures and units in your calculations. Include copies of all graphs used along with the calculations associated with them.
- VIII. **RESULTS:** summarize your results and conclusions for the experiment using tables and graphs. Label properly every table and graph and use the correct significant figures and units.
- IX. **CONCLUSIONS:** in this section you should give a narrative that interprets and compares the results. In this section, you should compare experimental values with the accepted literature values and derive conclusions from these results. In this section you MUST answer ALL THE QUESTIONS that will find at the end of the given procedure for each experiment.
- X. **REFERENCES:**
Example Article: Smith, John A. *J. Am. Chem. Soc.* **2012**, *100*, 23-28.
Example Book: Lide, David R. *Handbook of Chemistry and Physics*, Boca Raton, Florida, CRC Press, **2008**, *88th Edition*, Page 3-442

Lab notebooks will be collected the last day of class and won't be returned.

Reports

Your reports will be direct copies from your lab notebook with all the sections (I to X) completed for that experiment. Therefore, your grade will be based in how organized and clear is your lab notebook. No excuses will be accepted (e.g. the copier didn't have ink or paper, I didn't have money in my card, etc.). It will be your responsibility to complete your notebook and turn in your report by the deadline.

General Chemistry Laboratory I

CHEM 1102- Summer 2016

Learning Objectives

1. To allow students the opportunity to apply in practical laboratory experiments concepts previously presented (often in a rather abstract way) in the general chemistry lecture course.
2. To present new concepts in general chemistry for which there is insufficient time in the lecture course.
3. To familiarize students with the instrumentation and techniques used to determine chemical quantities.
4. To provide students the skills to measure, manipulate and evaluate quantitative chemical data.

Experiments Schedule*

Dates	Experiment	Report Deadline
6/8	Check-in, Syllabus, Lab Notebook, Data Analysis & Excel	-
6/8	Exp. 1: Volume, Mass, and Density	6/10
6/10	Exp. 2: Separation of the Components in a Mixture	6/15
6/15	Exp. 3: Empirical Formula of Magnesium Oxide	6/17
6/17	Exp. 4: Acid-Base Titrations	6/22
6/22	Exp. 5: Determination of Calcium Carbonate	6/29
6/24	NO LAB	
6/29	Exp. 6: Emission and Absorption Spectroscopy	7/1
7/1	Exp. 7a: Identification of an Unknown Substance I	7/6
7/6	Exp. 7b: Identification of an Unknown Substance II	7/8
7/8	Exp. 8: Enthalpy of a Chemical Reaction	7/13
7/13	Exp. 9: Molar Volume of a Gas and Check-out	-
7/15	Turn-in Lab Notebooks @ 1:00 PM	-

All the laboratory dates are subject to change at the discretion of the instructor.

General Chemistry Laboratory I

CHEM 1102- Summer 2016

Pre-Lab Notebook

All the pre-lab notebooks are due at the start (at 1:00 PM) of every experiment. Your pre-lab notebook correspond to **the first five sections (I-V) that you MUST prepare before you come to the lab.** You must prepare a "Procedure" using an outline format clearly showing all the experiments that you will be performing in the lab. All "Raw Data" tables must be properly labeled. Late pre-lab notebooks **won't be accepted (automatic zero).** As soon as the instructor finishes the pre-lab lecture, you will receive you notebook back with the pre-lab notebook part graded.

iPolicy

I invite you to read the following blog from Prof. Cara A. Finnegan (Communication, U of Illinois U-C).

Technology and the Problem of Divided Attention

In recent years the saturation of cell phones, text messaging, and laptops, combined with the broad availability of wireless in classrooms, has produced something I call the problem of divided attention. A March 25, 2008 article in the New York Times summarized recent studies of productivity in business settings. Researchers found that after responding to email or text messages, it took people more than 15 minutes to re-focus on the "serious mental tasks" they had been performing before the interruption.

Other research has shown that when people attempt to perform two tasks at once (e.g., following what's happening in class while checking text messages), the brain literally cannot do it. The brain has got to give up on one of the tasks in order to effectively accomplish the other. Hidden behind all the hype about multi-tasking, then, is this sad truth: it makes you slower and dumber. For this reason alone you should seek to avoid the problem of divided attention when you are in class. But there's another reason, too: technology often causes us to lose our senses when it comes to norms of polite behavior and, as a result, perfectly lovely people become unbelievably rude.

For both these reasons, then, turn off your cellphones or set them on silent mode when you come to class; it is rude for our activities to be interrupted by a ringing cellphone. Similarly, text messaging will not be tolerated in class; any student found to be sending or checking text messages during class will be invited (quite publicly) to make a choice either to cease the texting or leave the classroom. You are welcome to bring your laptop to class and use it to take notes, access readings we're discussing, and the like. You are not welcome to surf the web, check email, or otherwise perform non-class-related activities during class. Here's my best advice: If you aren't using it to perform a task specifically related to what we are doing in class at that very moment, put it away.

For the same reasons explained above, and because I consider very disrespectful and rude when these techno-activities are performed during my class, the following policy will be followed: "In the Chemistry Lab you need your lab notebook, pen, calculator, goggles and chemicals. But most important of all, you need to put full attention to the experiment that you are working if you want to pass the class. You must turn-off and put your cellphone, computer, iPod, iPad, and iWhatever-is-new away. Otherwise, I will ask you to leave the lab. My recommendation, avoid the temptation and put them in your backpack."

Engrade

Engrade is an online program that will allow you to have access to your grades. You will receive an email from the instructor with a link to view your grades and assignments online on Engrade. Sign up (is Free) if you do not have an account with engrade.

Grading Errors: Your instructor is not a machine. As humans can we can make mistakes. You have **ONE WEEK** after graded reports, homework, or notebook are returned to the class to rectify any grading errors. After the week has passed, no changes in grades will be made.