

Instructor: Petra van Koppen

Email: vankoppen@chem.ucsb.edu

Office Hours: Monday 2 - 3 PM and Thursday 2-3 PM or by appointment PSBN 3670 B

Learning Assistants (LA) Program in Chemistry goals:

To improve the quality of science education for all undergraduates

To recruit and prepare talented science majors for careers in teaching

LAs work directly with peers in the general chemistry laboratory in a role similar to that of a Teaching Assistant (TA). This experience provides the LAs with the opportunity to:

- 1) develop a deeper chemistry content knowledge
- 2) improve communication and teaching skills
- 3) develop a deeper understanding of the learning process
- 4) help build skills required for teaching positions

As LAs learn education pedagogy, they can practice what they learn as LAs in the chemistry lab. LAs and TAs work as a team.

<i>Week</i>	<i>Date</i>	<i>Chem. 1AL Lab Assignment</i>	<i>Chem. 183 Assignment</i>
1	Sept. 29	Watch Safety Video and answer safety questions online (Gauchospace) Friday Labs: Safety Quiz and Check-In	First Day Survey (Due Oct. 6) Teaching Problem Solving LA Responsibilities
2	Oct. 2 – 6	Safety Quiz, Check-In Friday Labs do Exp. 1	Teaching Problem 1 due Teaching philosophy due
3	Oct. 9 – 13	Exp. 1 Introduction to Laboratory Techniques Friday Labs do Exp. 2	In-Class and on Gauchospace: Reflection: Experiment #1
4	Oct. 16 – 20	Exp. 2 Nomenclature and Stoichiometry Friday Labs do Exp. 3	In-Class and on Gauchospace: Reflection: Experiment #2
5	Oct. 23 – 27	Exp. 3 Qualitative Analysis & Deductive Reasoning Friday Labs do Exp. 4	In-Class and on Gauchospace: Reflection: Experiment #3
6	Oct. 30 – Nov. 3	Exp. 4 Chemical Formula Determination Friday Labs do Exp. 5	In-Class and on Gauchospace: Reflection: Experiment #4
7	Nov. 6 – 10 Holiday Fri Nov 10	Exp. 5 Molar Volume of Gases No lab on Friday	In-Class and on Gauchospace: Reflection: Experiment 5
8	Nov. 13 – 17	Exp. 6 Equilibrium	In-Class and on Gauchospace: Reflection: Experiment 6
9	Nov. 20 – 24 Holiday Nov 23-24	NO LABS THIS WEEK THANKSGIVING	No class Friday Nov. 24
10	Nov. 27 – Dec. 1	Exp. 7 Antacid Analysis	In-Class and on Gauchospace: Reflection: Experiment #7
11	Dec. 4 – 8	Check-out/Lab Final Review/Quiz	Prepare for Lab Final Review LA Evaluations LA experience Reflections

To receive **course credit**, LAs enroll in **Chem. 183**, a Teaching Assistant course for undergrads. You will not be responsible for writing quizzes or grading lab reports / quizzes.

Credit / Hours:

- 1) **2 units:** The LA helps students during **two** Chem. 1AL lab sections (2.5 hours for each lab) and attends the LA meeting Friday 11- 11:50 AM, Phelps 1508.
- 2) **1 unit:** The LA helps students during **one** Chem. 1AL lab section (2.5 hours) and attends the LA meeting Friday 11- 11:50 AM, Phelps 1508.

CHEM 183 ASSIGNMENTS:

- 1) **Pre-Lab Preparation:** Prepare for teaching the experiment each week. Read the experiment and answer the pre-lab questions. If you need help please come see me. If you feel you need to review the concepts covered in a given lab, work the assigned problems in the text. Answers are posted on Gauchospace. **Lab Manual:** The Chem. 1AL Experiments 1-7, 2017-18 edition, are posted on Gauchospace.

- 2) **Teaching Problem Solving:** One of the goals of General Chemistry is for students to learn how to solve problems. But how can we teach students the skills they need to solve problems?

Work out the problem given. On a separate page show how you would teach this problem. That is, write out the questions you would ask a student to guide them to solving the problem. After each question, write the answer that you expect from the student.

- 3) **Reflections on your experience as an LA in the lab:** Every week, after you attend your lab sections, **post a comment on Gauchospace site for each experiment.** For example, for Experiment 1 on the Chem 183 website on gauchospace, go to the following link.
[Reflection: Experiment #1](#)

This forum has been created for each week of lab. Use this forum as an opportunity to discuss with one another and reflect upon your experience as an LA (you can comment on each other's posts as well).

- 2) **Teaching philosophy** (due Friday Oct. 6)

The assignment is posted on Gauchospace, go to the link: [TeachingPhilosophy.pdf](#)
A good Teaching Philosophy Statement will address the following points in a succinct manner:

How do students learn?

How do I facilitate that learning?

What goals do I have for my students?

Why do I teach the way that I do?

What do I do to implement these ideas about teaching and learning in the classroom?

(i.e. mention some instructional strategies you use)

Are these strategies working?

How do I know they are working?

What are my future goals for growth as a teacher?

Adapted from: Chism, N. V. N. (1998). Developing a philosophy of teaching statement. Essays on Teaching Excellence: Toward the Best in the Academy, 9, 1–3 (See UCSB Instructional Development <http://oic.id.ucsb.edu>)

- 3) **Lab Final Review:** Work out all problems on the lab final review to prepare for the last week of lab. Think about questions to ask to teach how to solve these problems.
- 4) Answer the questions on the **Learning Assistant Feedback Form**. Questions are posted on Gauchospace, go to either of the links below for word or pdf file:
[LA Feedback Form](#) [LA Feedback PDF Form](#)
- 5) **LA Evaluations:** The last week of lab students and the TA fill out LA evaluation forms provided to you in an envelope. Comments from students are very important to include in my letters of recommendations for you. Both you and a student will take the envelope of the TA evaluations and LA evaluations to the Chemistry office (building 232, the trailer behind PSBN). For evening sections please drop the evaluations in the TA evaluation mailbox (bottom right corner of the mailboxes by the stockroom window, ground floor).

FINAL EXAM: There is no final exam for Chem. 183.

LEARNING ASSISTANT RESPONSIBILITIES

Be prepared for lab! How?

Attend weekly LA meeting (required)

Emergency: Make up for missed LA meeting (make an appointment to see me).

Read the Experiment and answer Pre-lab Questions (posted on Gauchospace)

Get HELP if needed

Attend your lab section(s) every week. Needing to study for a midterm exam is not a valid excuse for missing your lab section. By accepting to be an LA you are expected to be an honors level student who can take responsibility to manage your time effectively. Study ahead of time so you can attend and actively participate in your lab section.

Lab Section: Arrive ten minutes before the start of your section. Stay until the end of lab.

Quiz: Take the quiz – notify TA if a question is not clear, if an equation is needed or a constant or any other information is missing.

Actively engage with students during the lab. Do not bring your own work to do.

Help students who are not making progress.

Discuss any problems in the lab with TA / stockroom

Do solutions need to be replaced? Need a new waste bottle?

Does a balance need to be repaired?

Computer / printer issues? Report all problems.

Questions: What do you do when you do not know the answer to a question? This is not a problem. Science is all about asking questions and learning how to solve problems, design experiments and discover answers. First repeat their question to make sure you understand their question. Or rephrase it to make sure you understand their question. You can ask their lab partner if they have thought about this. Ask the TA. If you can't figure out the answer you can tell them that this is a good question and you will get back to them about this.

Experiment revisions: If you have a suggestion for a revision in the experiment that you know may help students, please discuss it with your TA first.

Emergency: In an emergency or if you are too sick to attend your lab section, you must notify your TA and me. You may be able to make it up the lab in another lab section later in the week.

FIRST DAY IN LAB

The TA will INTRODUCE themselves to their students and introduce you: After they introduce you, they will invite you to introduce yourself.

The TA may be nervous on their first day. If they forget to introduce themselves or forget to introduce you, simply raise your hand and the TA may remember they need to introduce you. If not, simply ask if you can say a few words.

LA HELP: LAs can help as follows:

- 1) **Check:** Did the TA show how to use the lab notebook? Did they discuss Pre-Lab for Exp. 1 and mention the Example Pre-Lab on Gauchospace? If not, raise your hand to remind the TA.
- 2) Walk around and say hello to students and check to see if they have questions. Students may be nervous and too scared to ask questions. Ask them if you can help. When you smile students will feel more comfortable to approach you and ask you questions.
- 3) Check if students have the correct answers on the safety quiz. Students keep these in their lab manual for reference.
- 4) Collect the signed safety agreement forms.
- 5) Check-in sheets are in the back of the lab manual. If students need to help with the names of glassware show them the pictures in appendix 4 of their lab manual.
- 6) If needed, you can pick up extra copies of the safety quiz and safety agreement in the stockroom.

Building confidence: Remember that students can be nervous and scared to be at UCSB and to be in the lab. Acting in a self-assured manner is key to conducting a smooth and effective lab period. Preparation and practice are paramount to gaining this confidence!

Questioning for Understanding: Simply asking a student “Do you understand?” gives you no information regarding their level of understanding. The student may simply say “yes” even if they do not understand. Below are questions to check their understanding and help them learn more.

Can you explain this to me?

What led you to this answer?

Can you tell me more about that?

What did you start with?

What do these represent?

What were you thinking here?

How do you know?

How did these/this help you understand what to do next?

Is there another way you could try?

What strategy are you using?

How would you explain this to someone else?

Does that make sense?

Does that always work? Is it true for all cases?

Do you see a pattern? Can you predict what’s next?

Chem. 183 Gauchospace: Go to: [Talk Moves / Questions to Engage Students](#)

Reference: The Inquiry Project: Bridging Research & Practice

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LA Evaluations: Marina was an LA for four quarters. She made excellent contributions as a learning assistant, the teaching assistants and students greatly appreciated her help. She has also given me valuable feedback to help improve the labs and the LA program. Her reflections on the labs during my office hours and her suggestions during LA meetings were especially helpful.

I used the comments below in a **letter of recommendation** for her application for a CLAS tutoring position. She was hired as a CLAS tutor starting fall quarter 2016! 😊

TAs indicated:

Marina is a very smart and approachable person and I can always rely on her to talk about things that I missed.

Marina enhanced student learning in the lab by being approachable, talking to the students, giving them great insight and advice on important things. Love the fact she has done this before.

Students indicated:

She was really helpful in improving my understanding by asking me questions that would lead my thought process in the right direction.

She clarified questions we had and made the labs more engaging.

Not only was she helpful with chemistry and chem lab, but she always gave us advice and tips on how to utilize our resources outside of the classroom. Marina was extremely helpful to have in our lab.

She asked questions to help us figure out what is going on rather than giving us the answer.

She provides extra help and she's actually very helpful. Walks around a lot to make sure all questions are answered.

Having an LA in the lab gave us someone else to turn to for advice who knew where we were coming from as she is an undergrad student as well. Very helpful and knowledgeable.

She lightened the mood and made us feel welcome in the lab. She provided a lot of help and was very willing to explain problems we were stuck on.

She helped us understand how to do the problems rather than just telling us the answer. My experience could not have been better.

Confident, had a lot of tips. Good insight being a UCSB student in the same field I am pursuing. She was great.

She was able to get around to everyone's questions. She helped us out on our experiments and provided insight from her personal experiences. Everything she did was great.

She made sure the labs were not only a valuable learning experience but also a fun time. She helped a lot with the experiments and even gave insight on what our future classes would be like.

Could explain topics so they made sense to me, helped me understand better. Less intimidating than the TA. I wasn't scared to ask her questions so I actually learned and got more out of the labs.

She's really easy to approach (and less intimidating) and so she's really helpful when we get stuck on problems or we just need a new way to look at the problem. Having Marina as our LA just made the lab experience better because she was so helpful.

Learning Assistant Feedback: For advice go to the link below (posted on Gauchospace).

[Advice for Learning Assistants](#)

Try different methods of teaching, ask students questions, approach them first and they will soon feel comfortable in approaching you, be positive and friendly, and most importantly, enjoy the experience because this course not only let's you teach, but you get to learn more about yourself as much as you learn the material.

Be patient! Some students need a lot of help. Help all students – not only the ones who are struggling.

Go in with the intention to help the students succeed in Chem. 1AL. Always be prepared before lab, this is the key to being effective. You were probably in their shoes the year before so you know what they might be going through. Most importantly, have fun with it. You should be teaching because you enjoy doing it ☺

LAs definitely need to prepare for lab because general chemistry was at least a year ago for most of us and the material is not fresh in our minds. **Preparing makes a huge difference** in your lab experience and the students/TAs experience too.

"I learned that every student learns at a different speed and in a different way. Some learn better with visuals and others by doing a lot of practice problems."

"From being an LA, I feel as though I have greatly improved my communication skills and problem solving skills. Being an LA taught me how to look at a problem in multiple ways to try to understand it and figure out the best way to solve it."

"I've learned how to be a better teacher not just in chemistry but in general. Hopefully I can apply this skill in study groups for the classes I'm currently taking because then I'd be able to learn more."

"I've learned there are a million questions and a million more ways to answer them."