

Lab 1B • 09/27/11

{Note: Because this lecture introduces the lab and involves a review of the syllabus, much of this content is identical to the equivalent lecture from the other track, Lab 1A, as it is material that I have presented repeatedly and have therefore developed somewhat fixed statements to make about each topic. In the majority of instances, I was more satisfied with the turn of phrase used in the alternate lecture. For this one lecture only, I decided not to transcribe the entire audio word-for-word, as to do so did not seem to provide any additional value. For the remainder of the “true” lectures, I found the alternate presentations far more interesting in their variation, so I did faithfully transcribe all other lectures. I did listen to the complete recording, and I have transcribed the portions that I felt did contain superior wording or covered material not broached in the alternate lecture.}

This is the lab lecture time of the course. We will be taking a short break today. Each day that there is lab we will have that short break between the lab lecture and the lab.

{Review of syllabus}

{Lab safety}

{First pre-lab}

{Check-out}

For those of you trying to add in the course, you are welcome to stay all the way up until the point where we do do check-in, but because you are not enrolled in the course, you're not covered by our insurance, so I can't let you check-in and get a locker today.

{How to access website}

{Contrast of schedule for the sections}

In terms of lab, the goals for this quarter will be to get into the introductory techniques of organic chemistry. For example, our first experiment will be an extraction lab. We'll also be learning several pieces of instrumentation. We are somewhat fortunate at De Anza that we do have the instrumentation that we have – particularly, a nuclear magnetic resonance spectrometer, which works somewhat the same as an MRI machine does if you're familiar with MRI. It will be the most complicated of the instrumental techniques that we learn this quarter. We will also be covering infrared spectroscopy, which you might have done if you took Chem 1C [at De Anza], and we'll be covering gas chromatography as well.

As for as how this class is structured, there are three sections this quarter, but they are not interchangeable. So if you're signed up for this section, you need to come only to this section. Sections 01 and 02 is an entirely separate course.

Because we have to limit enrollment to 26 because of the number of fume hood spaces that we have, you can't go to another section to make up normally because they already have 26 people there.

{Overview of class structure}

As far as grade structure for the course: 75% of your grade is lecture, 25% of your grade is lab. However, you do need to pass the lab in order to pass the course. And you need to complete all of the labs in order to pass the course. As far as the breakdown of points within lecture, there will be three quizzes and three midterm exams. Each of the quizzes is worth 33 points, plus one more point thrown in to get that to 100 total. Then there'll be three exam for 150 points each; that's 450 more. And then the final exam will be 200 points, so all together that's 750. In terms of lab, there are going to be seven experiments, we will have seven lab reports. They will most likely be much shorter than what you did in the Chem 1 series because there aren't big exhaustive lists of calculations like you might have had for previous experiments. So seven lab reports, each worth ten points. At some point in the quarter I will collect lab notebooks, so there'll be a notebook assessment for 20 points. And then there'll be two lab exams: one during the middle of the quarter, and then one the day that we do check-out. Since we have lab and lecture together as one course, the final is actually going to be only for the lecture content. So we do not meet during finals for the lab portion. That last date that we do meet for lab will be when the second of the lab quizzes occurs. All of that adds together for 250 points, so a combined total of 1000. 75% lecture, 25% lab.

I do grade on a plus/minus scale. I do need to point out that in the community college system there is no such thing as a C-, so the lowest grade that's a passing grade is a C. You do have to get a C or better in order to move on to Chem 12B.

{Deadlines, including difference between in- and out-of-state students, as well a difference between drop with no record and withdrawal}

{Responsibility for drop}

{Registration deadlines and pass/no-pass}

As an instructor I never know who's doing this course as pass or fail. To me, you would look exactly the same on the roster list, it's just that after I submit grades, then that pass/fail designation would be put it.

Please be sensitive to these deadlines in case you need to change your status or you need to drop.

{Quiz dates}

{Make-up, absence policy, homework description}

I recommend you work all of those in-chapter problems for the sections I have assigned, but then I have also selected some problems for you to do. It's not good enough to know something in this course; you've got to apply it. In other words, you're not just accumulating knowledge, you'll also be acquiring a set of skills.

{no multiple-choice exams}

structure of the exam – concept problems, fill-in-the-blank problems, mechanism problems, synthesis problems

{lecture schedule}

{textbook editions – survey}

{survey of professions; broke down engineering into civil, mechanical, electrical}

{first experiment}

There's certain techniques that are not directly part of the experiment; in fact they're techniques that'll be used in many of the experiments. I recommend a few of them each session to read.

{availability of texts on reserve in the library}

Should I bring my lecture text to class? If you don't mind hefting it around, sure, but you don't have to have the lecture text. I do sometimes refer to diagrams in class, but can display them myself.

{teaching philosophy}

At the beginning, we do start out much more in the Chem 1 land, review of material. Since it's review, students tend to do much better. As we start getting into org chem and your familiarity drops, unless you've got good study habits in place, then the grades start to drop. Because not only do you move into new material, but that new material starts coming at you more and more and more rapidly. By the time you get to Chem 12B, you'll be learning multiple reactions a day, and for each of those reactions, you have to know all of the different consequences of that mechanism causes.

As you can tell, I like to teach by writing it down, because personally, the act of writing it down and being immersed with that material is one way to better absorb that material. Of course, each of you's got different learning styles; I do speak to that in here. If you haven't ever figured this out before, it would be in your best interest to figure out: are you a more visual learner? If someone writes something and you see it once, do you have it stuck in your head? If you're hearing it, is that what makes you learn it? If you do problems and you repeat something, are you a mechanical learner?

My part's the easy part of the job, 5% percent of the work; I just get up here and show you what chemistry is.

Safety

{Appropriate lab attire}

{story about Ryan having to wear just a lab coat because he did not bring a back-up set of clothes to lab}

{types of shoes}

Even monkey feet (Vibrams) would be better.

{tops}

Gloves

We check out a couple of pairs of gloves for free, then after that we won't let you check them out here. I recommend you might want to consider getting some cause it drastically reduces your chemical exposure.

If you do happen to show up without appropriate pants/skirt/whatever and if you show up in inappropriate shoes, I will have to send you home to change before you can begin lab.

Goggles!

{eye story}

We do have some sense of what college student should play with in here.

{when to put on and take off goggles}

“Oh, I’m just waiting for my friend.” Chemical don’t know that; glassware doesn’t know that. In this room, the instrument room, the balance room, or the stockroom getting something.

You can find safety glasses that are mirrored so they look like sunglasses. You can get ones with leopard rims. But get yourself a set of pair of goggles.

{food and drink}

{cosmetic}

{optional health info}

{identifying safety showers}

{eyewash stations}

15 minutes of rinsing is what you need, because you’ve got to make sure that you get everything out of your eye.

{demonstrating cart with acids and bases}

{secondary containment}

All liquid chemicals need to be in secondary containment.

Try not to be just on autopilot.

Chemicals for an experiment will be put out in a designated fume hood.

{fire alarms}

{freon story}

First aid – If you do get small cuts or scrapes or something like that, we do have a first aid kit in the stockroom. If you are more seriously injured or aren’t feeling well for some reason, if at any point you’re feeling faint, let me know first before you disappear so that when you disappear I’m not worried about you. Just let me know if you need to step out and get some fresh air. If something happens to you or you are feeling more distressed, we do have the health center that’s on-campus, and if they determine that you need more help, they’ll call whatever medical services they need to.

{fire extinguishers}

Broken glass – we have a separate trash can for that at the front of the class. Do not use the regular trashcans for that glass so that when someone comes in to change these trash bags they don’t get unexpected things stuck in their hands, because there shouldn’t be glass in those containers.

{evacuations routes}

{earthquake advice}

{waning not to block the fire trucks}

{for got to mention hair, headphones, washing hands}

Pre-labs

{miniscale versus microscale quantities}

You’re not inventing anything here; you are just taking a chemistry class.

{types of lab notebooks}

{identifying information}

{forgot lost and found}

The way I do lab reports is possibly different than what you experienced in the past. Many instructors have you write up the standard things like purpose, procedure, data, calculations, conclusion, and then, some sort of theoretic discussion, where you talk about the lab to show your instructor that you know what happened in that experiment. I take that discussion portion of it and put it into the lab quizzes. For pre-lab, we will discuss the theory in class, but you don’t have to write it up as part of your pre-lab assignment.

{lab exam cautionary note}

That’s a person that’s on the road to hurt on the lab quiz.

O-chem the workload piles up, so whatever you can do to stay ahead of the curve, the better.

{four reasons for doing pre-lab – safety of self, safety of others, learning, time efficiency}

You should have your own sense of the fact that you’re in a chem lab and should therefore hopefully be compelled to read these notes so that you’re keeping yourself safe.

Number one reason is to keep yourself safe. Number two reason is, indirectly, to keep other people safe.

Wait, was that a beaker or an Erlenmeyer? Wait, what do you do with that solution? Which layer is the water or the organic? It means there's a safety hazard. If you didn't do your own pre-lab and you're dependent on someone else that means you don't know about the safety warning and you're interrupting everybody else, distracting them, and that's the potential for something else to go wrong – besides the fact it just gets annoying for people.

You're inventing procedures, you're altering procedures. Even if you're following something step-by-step, you gotta put it in your lab notebook because that's a legal document. In the "real world", you sign your lab notebooks. If there's a patent dispute, that lab notebook – with your signature on it, confirming that you didn't falsify any of it – gets taken into court, and that's what can be the determining factor whose patent is it really.

{structure of pre-lab}

Where it refers to techniques, don't worry about writing those out.

You're not going to spend all day trying to measure 2.000000 grams. Cause if you do, the compound is going to sit there and lose or absorb water and it's not going to be accurate any more anyways. Whatever mass you do measure, you're going to write that down. Or if something changes color, or if something changes to being cloudy or clear. Your observations you can put down as well.

{no written notes for this lab lecture}