Lab 1A • 09/26/11

This is now my 12th year at De Anza College. I did my undergraduate studies at Rice University in Houston, Texas, then did my graduate work at UC Berkeley, graduating there in 1999 and have been here any since.

{How to access website}
{Logistics of three sections}
{Difference between syllabus and course outline}
{Office hours}
{Contact information}
{Accessing office}
{Accessing media files}
{Overview of class structure}
{Overview of lecture and lab content}

You cannot just at will swap between sections because there is only a limited number of spaces available in this classroom. So if you couldn't make it – if you decided that you wouldn't make it – to lab this afternoon, you cannot automatically come in the morning lab to make it up since there would be no room.

Section 3 is a separate course. Their timing is going to be a little bit different. Same thing with them: they'll have 26 students, there won't be any room in lab. So everything that you do needs to be for the lecture that you signed up for and this particular lab.

Grades: Always of particular students. I know; I was a student my own self many, many, many years ago. This is split 75%/25% in terms of points. 750 points for lecture, 250 points for lab, although you must pass the lab in order to pass the course. I have that clause in there because back when I first started teaching, I didn't explicitly state that and I had some students who felt they would be able to miss a few of the labs but still pass because they did well in lecture. You have to pass the lab to pass the course. For o-chem, this is going to be pretty much a no-brainer. This is not like Chem 1 where you have a bunch of numbers and equations that you have to mangle through to get through your lab reports. Lab reports in general are going to be much briefer. The only gotcha is lab exams. It's not how tough the material is.

In terms of lecture, we have three main things that will happen: quizzes, exams, and the final. I don't assign homework, meaning that I don't collect homework. I recommend problems, but I don't collect them. You're college students, you're grown up now. If you want to put the effort into this course to pass you will, and if you don't want to put it in ... we'll see what happens. Quizzes will generally last 20 - 25 minutes, meaning about half the period. They are more to see if you are studying the right types of things, or are you even studying. That's more what the quizzes are supposed to gauge. Exams, more comprehensive, worth a bunch more points. In general, the quizzes and exams are not cumulative. O-chem, unlike Chem 1, builds much more directly from material to material to material. So what you learn on exam 1 you're going to need for exam 2, but I won't on exam 2 specifically test you about the stuff that was on exam 1. The final, however, is comprehensive, covering the entire quarter, so what you learn now don't forget and try to relearn at the end of the quater. Because of the way o-chem works, there's going to be less of that forgetting then re-remembering.

200 points for the final, 150 points for each exam, there's three of those. 33 points for each quiz, plus I throw one more point in to round it up to 100 total, so that gives us our 750 points in lecture. For the lab, there are seven labs we will do this quater so ten points for each one of those. There will be an unannounced notebook check, that'll be for 20 points. And then there'll be two lab exams: one in the middle of the quarter, one at the end. We don't have a final in lab, because lab and lecture are combined structurally. So you only have one final that will cover the lecture material. The last day in lab, we will have our second lab exam. So all that adds up to the 250, altogether then 100 points. You must get a C or better to move on to Chem 12B. Our minimum requirement is 12A with a C or better to move on.

I do grade on a plus/minus system. If you are new to community colleges there is no such thing as a C– in the community college system. C is the lowest passing grade. The next thing below that is a D+.

I don't grade on curves because I don't believe in them. Not for a class of this size. I don't believe in trying to keep people artificially at a B just to satisfy some kind of grading curve that supposed to be out there. So if you all study and do the work to get an A, you'll all get an A. If all of you do not a damn thing between now and the end of the quarter, well then you'll get whatever grade corresponds to that. I don't have a problem, in a certain sense, with either of those scenarios, although I would prefer that you all succeed. In other words, if everybody blows the curve on a test then everybody will get an A.

I used to do make-up exams, but I don't any more, because I used to have too many problems with make-up exams in the past. So that means if you are studying until 11:30 the night before and you decide: "You know, I'm going to do crappy on that exam." Go ahead and skip the exam. Because, at the end of the quarter, if you have one really crappy exam .... As real people, something's gonna happen in our lives. You're going to possibly have some family problem happen, or some work problem happen, your car breaks down on the way here. If you do really poorly on one exam, but you make it up on the final, you get your act together, you get on top of it and do really well on the final. If the percentage on your final is higher than your lowest exam, I will take that final score and put it in for your lowest exam. I won't do it the other way around. So if you have an A and you bomb the final, I'm not going to put that low final grade in for one of your exams; that's just mean. It just means, unfortunately, you did poorly on the final. But this therefore covers you missing an exam. I'll tell you what honestly I felt was happening in the past was that a magic number of people all of a sudden the night before all got sick and couldn't make it to the exam the next morning. Why it always seemed that they got sick the night before the exam, I don't know. But because of that, that's why I don't do make-ups any more. Now, if you have something really tragic happen like you have a parent that passes away or something like that, then I've got to be a little bit more reasonable, if I'm going to be a human being. So there might be a few exceptions, but generally, otherwise, the answer is going to be no. No make-up exams.

Add deadlines and drop deadlines. These deadlines are it. If you want to add or drop or withdraw, you've got to make sure you do it before these deadlines. I won't grant any exceptions to these. {Listing of dates} If within these first two weeks a spot opens up I will add people in, not in the following week. To drop this course, if have to drop for whatever reason: your academic plans change; your work schedule changes; you decide that you just can't stand me – whatever it is, make sure you do it by the various flavors of drop deadlines. {Listing of dates} If you have a good academic record and you have one bad thing to you, where you have to have a withdrawal from one course, it's not going to keep you out of UC Berkeley. What I'm trying to say is a W is never worse than an F. I know people worry that: "Ooo, if I get a W that's going to look bad on my transcript." A W doesn't mean that you attempted the course, did poorly, and dropped. What a W is supposed to be for is: you attempted the course; you got in a car accident and couldn't finish the course. In other words, you had some reason you were unable to finish the course. I'm highlighting this because I have had students who have almost stuck with a course to get an F because they were worried about W. Don't get that F if you know that's where you're headed. Do get the withdrawal. After that withdrawal deadline, you're going to get a grade for the course no matter what, even if you stop showing up.

During the first two weeks of the course it is the instructor's responsibility that if someone disappears that the instructor drops that person. After the first two weeks, it is your responsibility. So if you disappear, and never e-mail me again after the second week, you'll get a grade for the quarter. Here's one example of why. International students, if you're here on a student visa, you know that you have to retain a certain number of units in order to maintain that visa status, without some other explanation. So, if you disappeared from the course, how do I know that you aren't still planning to come back? So if I drop you from the course and put you below your unit level, that's a problem. And if you disappeared, I might not be able to get a hold of you to find out what your story is. After the second week, if you nee to drop or withdraw, you have to do it.

{Survey the kinds of students: chemistry, biology, molecular cell, medical (pharmacy, optometry), engineering, interested?} I am going to acknowledge that most of you are not here because of your deep, burning desire and passion to study chemistry. It's because you've got some kind of prerequisite you've got to cover, right?

If you were here for interest, we do have the option for pass/fail. I never know that you designate pass/fail. They purposely keep that information from the instructor so we can't be prejudiced one way or the other. But, if you choose to go pass/fail, you can't change it after that deadline. So let's say that you're interested and you want to work, but you don't want to work that hard, but you're interested, then you go pass fail. Then you end up getting really interested and get an A. Can you go back later and get that A? No. What about the opposite way around. You don't really need this course but you think: "ok, I'm going to go ahead and take this course, and I'm going to get an A in this course." And then you realize: "oh crap. This is not what I thought it was going to be." And you didn't choose pass/fail, but you're stuck in the course. Can you go back an make it pass fail later? No. Whichever way you're going to do that, make sure you do by the deadline.

{Quiz dates}

The final exam date and time are partly determined by whether the lecture portion of the class – not the lab – meets on Tuesdays and/or Thursdays. That time especially is non-negotiable. I know that some of you are really organized. So, since I've give you these quiz and and exam dates, and since you know the date of the final exam, international students, make your trip home after the final exam. For those of you who have jobs or have something you know that you're going to travel for, if you know ahead of time that you're going to be gone particular days and you let me know, because of you organization I might therefore be willing to let you take a make-up exam for those kinds of situations. I have given you the schedule, so if you give me one right back right away, I can work with you.

We will be doing practice, especially in the type of problem where you have a substrate, a reagent, and a product. We're going to have certain points in the quarter where we practice for the exams. There are no multiple-choice exams in this class; it is all written. For those of you that are ESL students, you might be sweating it a bit the first quiz or exam. But, I prefer those types of quizzes or exams because then I can give you partial credit, so I can find out what you are thinking. If you kinda know something but don't know just one little detail, at least you can write the rest of it out and have a chance to express yourself. I feel I get a better assessment of what you've learned and what skills you have by doing non-multiple-choice exams.

For the lecture schedule, we are going to be jumping around section by section.

The textbook has a good balance between difficulty and readability, as well as completeness. If you want a more challenging textbook I have other suggestions I can give you. I will be placing a copy of this text on reserve in the library. Because I don't collect homework, you're not required to purchase this.

{first experiment}

{teaching and learning philosophy}

This is not my first time going through this show. This is not my first time teaching o-chem. I was a student of o-chem at one point. I know what's happening today, what's going to happen each week along to the end of the quarter, and I know where the topics are going to be more difficult, less difficult, more interesting, boring as hell, and everything in between. I know that no matter how many times I tell you "read the chapter before you come to class" – how many of my past students know I used to say it every day in class, and how many of my former students know I got ignored nearly every day in class. So I know what things I'm going to get up and say as an instructor over and over again, and I know which things as students you're going to ignore over and over again. I know that the exam average on exam one will be in the 80 to 90 percent range, while on exam two, unless things go differently than in the past, will be more like the 60 or 70 percent range, as well as exam 3. So in other words, I know where we're going to be at the beginning of the quarter and I know where we're going to be at the end of the quarter, and I know the way to get between the two. And it's all useless, unless you do the study. I could have PowerPoint presentations, I could have 3D holographic presentation, I could ... no, I'm not going to make things blow up in here, but I could do whatever! What are you going to do? When are you going to do the work? When I tell you that you need to read before you come to class, why am I telling you that? Not just because I'm the instructor and you're a student. ESL students: I've taken foreign languages, I know that for some of you to read a chemistry text, here's the dictionary, here's the text. You get three words in and there's already one you don't know, so you spend five minutes looking that word up. You get five more words in and you realize that that first word actually had five different meanings and you chose the wrong one, so you've got to go back and reread it. Some of you are smiling; it works like that in a foreign language, doesn't it? I've done that. I had to write philosophy papers in a foreign language once, I know what's that like. So that's even more reason you want to read before you come to class, so when I start using these vocabulary words, you've heard them before, you're not lost in class. Even if your normal English speakers, the word hood – something you put over your head? – this thing's also called a hood. So there'll be some terminology even an English speaker won't know what it means. And then there's chemistry, and who knows what that means, right? Chemistry is its own language. The atoms are like letters, molecules are like words. Words come together according to grammar rules; molecules react according to certain rules – kinetics, and thermodynamics. You put words eloquently together to make a nice story. if you put molecules together in the right order, you make something that's a medicine. So, chemistry is its own language. What effort you put in, you're going to benefit from. So you do these things that I say: read before class; do the homework problems. You're going to succeed. If you don't do a darn thing, if you are the iPad or iPod generation where you come to class and this happens up here and you just kinda sit back and watch it happen, kinda Facebook style, doesn't work like that. Shouldn't work like that in class. Hopefully, as you come to know me, I'll come to know you. We'll have more question/answering going on. Since it's about the course it's all me today, but I don't want that in the future. It gets boring for you all. You do these things I'm telling you, you will do well, you will not follow the trends of pass classes, maybe you won't crater on that second exam like every o-chem class before me has. That's all I can do: show you how to get there. You've gotta do the work. That's what the philosophy statement says.

Absences

You might be absent for lab one day. Because of the limitation of space, I can't let you switch between sections. Most of the experiments are multi-day, so if you miss one day but you're really organized, you might be able to hoof it and catch up on the next day. If not, if something really bad happens and you've got a legitimate excuse, or even if you're honest at least, I'll even take poor excuses. I had someone that was in a lecture once that had a friend drive him in because he had had his 21st or something birthday, so he still wasn't sobered up the next day, so he couldn't drive to class. But he showed up to class. I let him out of the quiz or whatever was going one because he told me straight up what happened and I thought: "ok, honesty." Sure; you get a pass. Just tell me what's going on and I can work with you. For the lab, if something legitimate or well-explained happens, I can say, do this and I'll still give you points for the lab, or I'll know that you'll do this technique in another lab, I'm not worried about it here. So yes, you have to complete all of the labs to pass the course, but if something in real life happens, communicate with me and we'll figure some way around it.

Safety

Since most of you have take three or four (or more) quarters of chemistry already, you've probably heard a lot of these things before.

Let's start with dress. The hard guidelines are this: you cannot wear shorts. Why? Because things fall down, and your legs are down below you. So that's why you need to cover from up here to down to your ankles. Whatever it is that you wear needs to go all the way down to your foot. So I recommend sweat pants, track pants, something like that, because for lab lecture, since we still have things put away, I don't mind if you show up to lecture or lab lecture in shorts and then throw something on just for the lab period itself. I recommend something like so you have a spare change of clothes. To myself it happened once where I got stuff all over me and I had nothing to change into. I was able to get something, but still, you should have something on the side. Unlike the way I'm dressed today, do not wear your good clothes to lab, because some of them will get ruined. I always tell this story about in grad school, where I had jeans that within the first few months of me starting to work there, they all got holes right at the same level. I couldn't figure out what was going on until I was in lab one day talking to someone and I leaned up against the bench, and I looked down and right where I was leaning was exactly where the holes were showing up. Anyone that's worked with silver nitrate, you know what it does to your clothes and skin. So don't wear your Gucci, don't wear your Armani, leaving your bling at home, bring your crappy clothes for lab so you don't get them ruined. Again, it has to be something that is ankle-length.

As far as shoes, I used to say no open toe, now I saw no open shoes period. What I means is: I've obviously got a hole that my foot went through so I could get it into the shoe, but otherwise, there are no openings here. So things like sandals, obviously, won't work; socks and sandals is not appropriate; Crocs that have little holes on the top of them, that won't work either. Whatever kind of shoe it is, it's gotta be a sneaker or something that's only got a place for your foot to go into and that's the only kind of shoe that's acceptable.

As far as tops, we don't have any specific department guidelines, but obviously the more skin you're showing the more that you're going to get exposed to chemicals if you have a spill. So, in fact, what we recommend is a lab coat, so that way you're protected, your clothing's protected, you've got something else for the stuff to spill on. So no shorts, closed shoes, I recommend a lab coat.

Goggles!

You've probably had three or four quarters of instructors yelling at you about goggles. I'm going to be one more quarter of an instructor yelling at you about goggles. Because it's the simplest thing you can do to give you the maximum protection from the worst-case types of accidents that can happen. This is not a Chem 1 lab. The chemicals that you use in here are considerably more hazardous than the ones in Chem 1. Don't think that just because you're at a community college in a college chemistry class that something can't go wrong. Having said that, I've only had two fires in lab since I've started teaching here and so far haven't had anything that's blown up. Well, I had a thermometer blow up in one lab, which that surprised all of us, but I haven't had chemicals blow up – yet. When I was working at grad school, though, just down the hallway from me there was someone who was working with something in one of these fume hoods, in one of these containment systems. They knew it was a potentially hazardous reactions. She did everything right, but it was a hazardous reaction; blew up. She happened to be there. She was, other than being a little rattled and maybe a couple of scrapes or something she was ok – especially because she had her goggles, because she had glass embedded all the way around in her goggles. So, if she hadn't had her goggles, she wouldn't be seeing. I don't want to scare you too much, we're not playing with those kinds of chemicals in here, but, it's not even the chemicals that I'm most worried about. A beaker, like the one sitting up there, if something happened and that fell to the ground, what's to guarantee that a little piece of glass won't come up at just the right trajectory and come get you from the side. So you have to have goggles from the moment that we open up equipment in here to the moment that it's put away, the moment that the last bit of equipment is put away. So if you finish your experiment early, but your friend's still sitting there working away, you can't sit there chatting with your friend without your goggles on, cause the glassware and the chemicals don't know that you're done with the experiment.

If and when you do get your own goggles, just make sure that you don't get any old random goggle from Home Depot. Make sure that they're for chemical use and not just for mechanical use, as they can be two different types of goggles. The one requirement is that, when the goggles are on, they provide coverage on the sides, they have some form of side shield, so splashes or things ricocheting from the side won't come in to get you this way. You'll need your goggles today since you'll be checking in and there's glassware involved; if you don't have your goggles today, you can check those out.

Someone mentioned hair. Yes, later on when we're using Bunsen burners, I strongly recommend that you tie your hair bad. Has anybody ever seen hair catch on fire? You saw how quickly, therefore, hair ... it just ... poof! It's gone! Tie your hair back.

Food and drink

For the many of you that have your water bottles in here, I don't want to see them use or in here again. I know that some of you all are big into hydration; I'm not against it. And it's not that I actually think the chemicals are going to leap into the bottle from the lab. It's this: you get the chemicals on your hands, you touch bottle. Absentmindedly, you'll touch the top of the bottle where your mouth is going to go, which means you just put chemicals on the bottle that you're about to drink from. That's why we don't allow water bottles in lab.

Same thing with food. This is right after lunch and right after lecture, so you might get stuck in a situation like I am right now. I wasn't thinking far enough ahead and was too worried about what was going on today that I didn't have time to eat this morning and I won't have time to eat until at least 3 o'clock today since I had lab this morning. Not that I want pity, I'm just saying, I know that you're going to be trying to sneak your food in. Same thing. It's not necessarily that I think the food's going to sit there and absorb chemicals from the room. It's – you get your hands contaminated, you touch the food, contaminate the food, and therefore you have eased the ingestion and exposure by eating it. Food an drink, don't bring it in here. If it's food and it's tasty I'll just take it from you. We do have a place out here in the hallway towards the Chem 1A lab, there's a rack of shelves that students have goten the habit of stashing their stuff on so they can sneak in and sneak out to have it in between. If you're not actually eating in the lab itself, that's ok. And certainly if you have some dietary restriction where you must have food at certain times, yes, you need to do that. Just don't do it here in lab.

Headphones

Some of you love your iPods; not here in lab. Cause if there is an accident going on I need to be able to yell at you to get your attention. If you've grooving away, you won't know what's going on.

Cosmetics, the same thing. If you're putting cosmetics on, that's not a good idea in lab either because the same exposure pathway.

This might generate a few giggles, but back in grad school we used to say we knew who the chemists were because they washed their hands before they went to the bathroom. If you can't figure out what I mean by that just think the next time that you have something that's really super-duper spicy .... The point is, as soon as you leave here, the very first thing you should do is go wash your hands so you minimize exposure by you contacting yourself or other people throughout the rest of the day.

A couple of completely optional things. I can't ask you personal information. I can ask you to consider these two situations. One, women, if you are or think that you're going to become pregnant, this is likely not the class for you. I'm not a medical doctor so I can't tell you it's unsafe to be in here while carrying a child. However, your doctor may very well tell you that. I can provide a list of chemicals to your doctor who can then evaluate it to determine how same or unsafe it is to be in here. For the general class, again, I can't ask you for personal information, but if you have a pre-existing medical condition that you think you will be benefitted by my knowing .... Let me give you a situation like what I'm talking about. Back in grad school, one of my coworkers had epilepsy, had an attack because a change in medication or something was going on. She ended up being fine, but in that situation, we don't think, "oh gosh! what medical thing is going on?" If you're in a research chemical laboratory, you're thinking, "what did she just get exposed to?" That's what we're worried about. We don't have potentially those kinds of chemicals, but there was one case with someone one quarter who had narcolepsy – the inability to control staying awake – the student was fine, but still, we didn't know what was going on. If you have something like that that you feel comfortable sharing with me, it's only going to be so that if something happens I can help you out.

That's personal safety, what about the room itself?

{identifying safety showers}

Why do we want to contaminate the environment? We don't, so we don't put drains on these types of shower systems.

{identifying eyewash stations}

Two reasons why an eyewash station might be necessary even with goggles. Floating goggle syndrome, and then just simple lack of awareness. What I mean by floating goggle syndrome is that I'm guessing that most of you are not big huge fans of goggles, and yes, some types of them to tend to fog up. Invariable what happens, you're doing an experiment, you know I'm going to yell at you if you take your goggles off so you leave your goggles on, but then at some point you need to look down at your lab book, so you do this when you look at your lab book. Realize that your lab book is usually down at the same level where the chemicals are. So the whole point of protecting you from the chemicals was not to do this, but you just did it because you were looking at your lab book. The chemicals aren't going to know that you're just look at your lab book. Once his happens, they often stay up, until you get yelled at to put them back down. Make sure that you're actually wearing your goggles and not just sporting your goggles.

The other thing that happens is that you're working, working, working, working, then do this [rubs eyes]. Which means you just rubbed the chemicals into your eye you were avoiding geting in your eye. Not as serious as geting something splashed into you but still can irritate your eye. That's the reason that in this class eyewash stations have been used.

{demonstrating eyewash stations}
{demonstrating cart with acids and bases}

Secondary containment

In particular if you have a glass bottle, glass can break, so if something happens and it falls and it breaks. It's not just an accident, since it's got some nasty chemicals. So then you have some secondary containment, some other box, jar, container around it to collect that chemical if the primary bottle breaks. SInce the is worry is about something breaking and spilling, each secondary container must have only chemically compatible things inside of it. So, acids can only be stored in one container separate from bases. As you use these chemicals throughout the quarter, don't just come over blindly, grab a bottle, then put it back wherever it happens to have space. You need to get it back to the correct container since, by law, we have to make sure that things are correctly segregated.

{explaining difference between regular and glass trash cans}
{pointing out fire alarms}
{explaining fire extinguishers}

Do you know what not to do with a fire extinguisher? Don't aim directly at the fire first, especially if you've got a little beaker. If that thing puts out any kind of kick, you're going to blow the beaker clear across the room and start a fire somewhere else. So you start above or to the side but not directly at it so you can get an idea of how strong it is, then come down to the fire. There are different types of fire extinguishers. For example, if you have a sodium fire, you don't want to put water on that because that's just going to make the sodium blow up. So there's metal fire extinguishers, there's this sort of general purpose fire extinguisher which this is appropriate for everything that we will be doing in this classroom.

{explaining evacuation routes, including pointing out non-exits}
{earthquake advice}
{waning not to block the fire trucks}

Pre-labs

{demonstration of type of lab notebook}
All that you need for a lab book is some kind of simple composition notebook. It does not have to be one of those leather-bound, acid-free-page archival notebooks, just something inexpensive. The only thing is that cannot have any perforations and it's not spiral bound; neither of those is acceptable. As far as what type of paper is inside, it can be plain paper, line paper, graph paper, whatever you want. If you have a Chem 1 lab book that you still have several pages of leftover, I like people that conserve, so yes, if you want to tape over or staple the Chem 1 part of it, if you never care about looking back at it again and just use the rest of it for your Chem 12, that's fine.

Why are we doing pre-labs?

Yes, there's this thought that I'm a teacher, you're students, so I'm making you do work. But there's a little more to it than that. One of the main reasons is safety. I remember clearly there was an experiment that we did where in the directions it had a note that if you mix these two things together you'll produce a lachyromer. A lachyromer is a chemical that, if you breath it in, well, you can't breath, because it's so irritating that it chokes you. Maybe not permanently, but just for a moment. Have any of you ever worked with pool chlorine, the big bulk tablets used for pools? Imagine 26 of you do an experiment where you accidentally make that kind of thing in your lab; probably not such a hot idea. I went through my pre-lab explanation and I said: "by the way, how many of you read that note in your pre-lab preparations about the lachyromer?" Half the hands in the class went up, so half of the class, do you care so little then about your own safety that you're going to sit there and be exposed to this hazardous chemical because you couldn't be bothered to check through your safety in your own lab notebook. There is no answer to that. The answer is either, yes, I don't care about my self, or, I was too busy, which means, you don't care about yourself. Part of the pre-lab is so that you'll read is so that you'll know if it's safe or not. Yes, if I'm doing my job as an instructor I'm going to tell you, but remember, it is my job to show you what you need to learn, and then you've got to do the job to learn it. So the primary reason is so that you're safe here in the lab.

There's some secondary reasons. If you don't prepare your lab, then you have to the potential to be this annoying person, which you've all seen in the class before: wait, what's in this step? wait, what size beaker? wait, is it one gram or two? is this blue? what do we do next? what experiment are we doing? Get's annoying, doesn't it? I don't want to see that person, and you shouldn't want to be that person in the class either. If you prepare, you're not going to be an annoyance to other people, because if you're distracting other people, you're going to cause accident that way, so again it comes back to safety. There is, of course, this novel idea that you're trying to learn, albeit you might not be dying to be in a chemistry class, you're just trying to get through your prerequisite. But if you're spending the time and the money and the effort to be here, why not get something out of it? So, if you read ahead of time, you're going to get a whole lot more benefit out of the lab lectures I give you. The real reason, besides all else, to do you pre-lab is this: you don't have chemistry class after this, unless you're taking it somewhere else. So, if you are prepared enough in you're pre-lab that you can walk in and the moment I say go you're already five steps into your procedure, if you get done an hour before everybody else you go home an hour before everybody else. I don't make you sit here the whole time just because you're supposed to be in lab; no, you're supposed to get a certain something done. So if you're really super organized, you get to go home early.

Lab exams

For the pre-lab, I don't make you write up anything about the theory of an experiment; I only make you write up the procedure for that experiment. So what ends up happening is everybody's worried about the procedure, since, I'll tell you that if you don't have a pre-lab, I say ok, you can sit here for the lab lecture and then you can go home and get a zero for the lab. Because, if you're not learning, if you're not safe, and you're being an annoyance, I don't want you. So if you don't do your pre-lab, you get a zero for your experiment. If I don't tell you again for the rest of the quarter, it's in the syllabus, it's in the recording, you're hearing it right now: if I forget to remind you that you have a pre-lab due for an upcoming experiment, it is your responsibility always to have a pre-lab done. Because everybody's worried about the pre-lab, people ignore the theory. "Oh, I'll read that later; he's going to talk about that in class; I'll read that later." That goes on all the way up until the first lab exam, then everybody wakes up and goes: "argh! What about all that stuff he was lecturing on the whole quarter??? Crap, you mean I have to know all of this stuff you said in lab?" All of the things that I talk about in here go on the lab quiz. That's why the lab reports are shorter in this class. Unlike what some of you dd for Chem 1, where besides purpose, data, procedure, blah blah blah, you have an extensive description of what you did, I don't do that, to save some time, since lecture's kinda heavy in this class. But that means that people get to that lab quiz and bomb it, not because it's tough, but because they couldn't be bothered to study before then. The theory that I present is on the lab quiz, but it isn't in the pre-lab.

So what do you need to do for the pre-lab?

{locating procedure in text}

There are two types of procedures: one called miniscale, one called microscale. Micro, smaller than mini. The idea being the smaller we make the quantities, the less waste we're generating, the lest cost there is, the more environmentally friendly it is. But, sometimes, the more unlike reality it is. Yes, we try to use small quantities, it's a good goal to work towards, but we still make some things on the gallon or barrel level. So there will be some cases where you can't just operate on the microscale. So, we've made a compromise, we're going to to the miniscale procedures.

Lab books

{putting identifying info in lab book}
{listing lost-and-founds – stockroom, PSME, campus security}

Write out a column for the procedure and a column for the data. Make the procedure column bigger cause you're not going to take down very much data in this first lab. You'll have something like this. The first real step of this lab is: obtain two grams of a mixture of benzoic acid and naphthalene; dissolve the mixture by swirling it with 30 mL of diethyl ether in an Erlenmeyer flask. Don't just write word-for-word what it says there; put in your own phraseology, put it in your own terms. You can abbreviate however, wherever you want to. The way that you can figure out if this was a good enough pre-lab or not is if you can get through the experiment without having to look at this once. Cause, in fact, that's what we're going to do Wednesday. When you come into lab Wednesday, you will not be allowed to look at this book after lab lecture. You'll have just your notebook so you'll have to do your lab just from your lab notebooks. Your pre-lab, then, is nothing more than a listing of these different steps, something like a laundry list of what you've got to do. If you want to use colors for certain types of steps, if you want to annotate, any of the fancy stuff you do at your on behest. All I care about is: is that procedure complete?

In grad school, this is how things work [pre-lab]. You don't have a cookbook that you're sitting there reading as the reaction goes on. Cause you've got to know if this happens then this; of this starts boiling over, you need to do this. Or, in research, no one's done it before, so you've got to write it up, what's going to go on. So you put everything in your lab book first, and then you follow it. In fact, it's not even just one experiment that you're doing; you're going to set one experiment up, then while it's doing what it needs to do you start another one, then you come back and check on that one. An employed chemist has the ability to constantly bounce back and forth between projects like that.

So in real like, unless you're following a protocol, something that's just set in stone, you never do an experiment out of a book, you do it out of your own lab book. That's why we're doing it that way.

{switching textbooks}

We generally do not switch textbooks mid-sequence.

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{no written notes for this lab lecture}

Structures

No structure for this lab lecture.