

“The whole of science is nothing more than a refinement of everyday thinking.”
- Albert Einstein

PHYS 115 SYLLABUS – Spring 2012

sec. 0201

MTuW 10:00 – 11:50 am

Room: Phys 3316

Instructor: Eric Kuo (erickuo@umd.edu)

Office Hours (Room: Phys 1322): By Appointment – I’m always happy to meet!

My goal for this class

It’s common to think that learning science involves taking in information – facts and formulas and problem-solving methods – and memorizing it. *But this isn’t what scientists do!* Scientists come up with their own ideas – developing, testing, and refining them to get a better understanding of how the world works. *My goal for this class is for us to come up with, develop, test, and refine ideas in the way that scientists do.*

Our experiences in this class will probably be a little different than in your previous science courses. The main elements of this course will be observations that you make, your everyday intuitions about the world, and discussions that you have with your classmates. Don’t expect to be sitting and taking notes on lectures. We are going to develop the “curriculum” as we go, through the refinement of your ideas. Ideas are correct only if you can support them with evidence and reasoning, not because the teacher says so.

What are we going to do in this class?

In class – We’ll mainly be making observations, coming up with our ideas of what’s happening and why, testing those ideas, and refining those ideas through discussion. This means that *participation is important!* The details of this will become clearer as you get experience doing this, and I’ll offer some guidance too.

Daily sheets – At the end of each class, I’ll give you some time to fill out a short daily summary of your ideas (e.g. What did you figure out today? What confused you today? What should we do next?). I’ll collect these and read them before the next class, to get a sense of our progress as a class.

Homework – There will be homework, approximately once a week. Typically, the homework will involve essays asking you to reason with some of the ideas we come up with as a class. I may ask you to provide feedback on other people's essays and revise your own essays, especially in the beginning as you're learning how to do this sort of thing. I encourage you to talk with other people to work out your ideas, but write the essays yourself.

Exams – We'll try to explore 3 different topics, so there will be 3 exams (roughly a month apart). The last exam will be during finals week.

Notebook – All of these things (any notes you take on observations or discussions, daily sheets, homework, exams, etc) will go into a 3-ring binder to form your notebook (or journal or diary or whatever you call it). This will be sort of the "textbook" for our course. It's important to have a good notebook, because you'll be able to use it as a reference to our ideas in class, when doing homework, and during exams. You can organize it any way to like. I'll collect the notebook twice over the semester to give you comments.

Ok, what about grades?

I want to focus our attention as much as I can to the *substance* of what we're doing rather than on *grades*. In the end, that will lead to the highest quality of work. For this reason, I don't like to put grades on individual assignments. My experience is that it distracts us (me included!) from what this is all supposed to be about – learning, not accumulating points.

So you'll find lots of written comments on your work, but no points or letter grades. I know that this isn't what you're used to, and I'm happy to speak with you about it, including talking about your grade if you're concerned. I'll score the exams in the conventional way, and I'll provide an estimate of your grade after each exam.

Another reason I won't assign points to all of your work is that I'm not just going to add up your work on all the assignments to calculate your grade. I care a lot more about what you're doing at the end of class than at the beginning. Even if you start slow, a big improvement throughout the class will result in a good grade.

Your grade will be based on your essays, participation (which means more than attendance!) in your lab group and in class, lab notebooks, daily sheets, and exams.

Special Accommodations

If you have any special needs or if anything comes up, please don't hesitate to let me know so that we can figure out accommodations.

Academic Integrity

In this class, I will expect you to collaborate with other people in this class. It's quite appropriate (even recommended) to seek help from classmates on the various assignments. However, it is important that you write out your assignments on your own. Identical work is not allowed. A rule of thumb is to discuss with people, but be alone when you are writing your work, so that the final product is in your own words.