IN RESPONSE TO STUDENT EVALUATION COMMENTS.

This document is to a certain extent a statement of my “teaching philosophy”. It was motivated by my wanting to keep track of comments students have made in student evaluations (over the course of a few years) and what my thoughts about the comments were.

Lecture Pace and Organization.

Most students find that I write too fast and cover material too fast. One reason for this is that there is a certain amount of material which I want to get through in the quarter and sometimes this requires going quickly. However, I believe that it is more important that students truly understand the material I do cover than simply “getting through” all the material. In some classes it may be possible to reduce the content a little and slow down; in others this isn’t really possible.

One remark I should make is that while I write very fast, it is not necessary to copy everything down. Note-taking is a skill which must be developed; you should write down what you feel will add to your understanding. It is hugely beneficial if you have read the text before the lecture – you will then be in the position to assess whether what I am writing will add to the understanding the text provides, or if it is simply verbalizing the concept in my own words.

When there is a board full of writing which is important to copy down, I will try to remember to pause an let people catch up – don’t hesitate to say to me “hang on a minute, I’m catching up”.

I tend not to say explicitly what section of the text I’m currently covering, in part because I think the material speaks for itself, but I have had some students comment that they would find it helpful for me to be more explicit, so I will endeavor to be so.

In some classes I have provided notes online. I am in two minds about this. On the one hand, I like it that students can concentrate on the concepts we are learning and not concentrate on taking notes; when notes are provided, I encourage you to have them with you in class and follow along, writing your own additional notes only when you feel I am adding something extra to what is already there. On the other hand, the process of writing things down for oneself is a step toward understanding.

I also worry that students will (foolishly) think that with the notes at hand, coming to class is not really necessary. I don’t mind at all if students don’t come to class, but for the most part I think they are making a very big mistake and so I don’t want to “encourage” such behavior by providing notes. Also with my own notes, I can’t promise that there won’t be (small) errors in computations. I write these notes as a guide to how I want to present the material and so am not always too worried about the correctness of small calculations. As I find such errors, or as they are pointed out to me by students (I greatly appreciate this!) I keep updating corrected notes.
Classroom Dynamics and Atmosphere.

Most students comment that they enjoy my humor. I hope that students are able to relax and enjoy learning with me. Sometimes I make jokes at a student’s expense. I am always very careful to assess whether it is offensive or belittling to the student and I like to believe that I never make someone feel bad as a result. However, some students have commented that they feel like I am “picking” on a student (not themselves, I suspect). I think it is very healthy to be able to laugh at ourselves, and in particular to lighten the situation when we are wrong – one of the most important lessons in learning mathematics is learning to be willing to be wrong! But if you ever feel like my humor is inappropriate, you should tell me. You can tell me in person, or if you feel more comfortable, tell me anonymously e.g. via an anonymous post on “BlackBoard.”

Often times I am somewhat critical of the class when the performance on a (to my mind completely reasonable) exam has been poor, and it translates to me that the students are not working hard enough. A student correctly commented that such criticism is not inspiring of the class and that if someone is not working hard enough, they will see the results and have to live with it. My problem is that I am personally invested in having students learn the material and succeed in the class. When I see evidence that students are not giving the effort necessary, I need to address that. I will try to convey my disappointment in a more encouraging way.

I want the classroom to be an environment of discourse – I don’t want to be the only person talking all the time. This requires students to become involved, and in particular to take the risk of saying something that may be incorrect, or may show them up as lacking understanding. But this is exactly what you are in class for! I expect you to be wrong most of the time! I expect you to lack understanding! Otherwise I wouldn’t need to teach you anything. So please speak up when you don’t understand something, and take a chance at answering a question even if you aren’t completely sure you have it right. Please also be aware of “whose turn” it is to answer questions – it doesn’t work to have the same person answering every question, so sometimes even when you know the answer you need to step back and let others take a shot.

On occasion I have received the comment that a lack of questions should not be translated as the students understanding the material. Often, the very fact that a student doesn’t understand means that they feel unable to formulate a question. The problem is that if no-one says anything, I have no way of knowing whether the concept is obvious and everyone is bored waiting for me to move on, or in fact the concept is horribly confusing. What I need is for students to simply say “I don’t understand, can you go over that again.” One solution I have used in the past is to work through the class list and aim relevant questions at individual students, thus “sampling” the understanding of the class. I will use this technique if it is the only way to get people involved, but I would prefer that the class have its own natural dynamics.
Examples and Applications.

One of the biggest challenges in teaching is finding the balance between repeating methods over and over by way of more examples and stepping back and discussing the “big picture” and underlying concepts which are independent of specific examples. Most students ask that I “do more examples.” The problem here is that the same students want me to slow down. I think that the best solution is to have students tell me when they need another example. I will often pause and ask the class “would you like to see another example, or shall we move on?” and invariably no-one says anything! You need to be more pro-active. I personally like to dwell on the big-picture as much as possible, but it is not always the best way to learn new material.

One thing that I will always do is answer questions from homework. A typical practice of mine is to start every class by asking if people have questions they want to go over, and this is often a great source of extra examples. It is especially good because the majority of the class has already thought about the problem.

In some classes the applications are naturally drawn from physics, and this is frustrating to students who come from other disciplines. I am conscious of this fact and will always try to draw examples and applications from as diverse an area as possible, but it is not always possible to apply concepts to arbitrary disciplines. It is very rare that I would expect you to know anything specialized to a particular discipline, however.

Exams.

Students invariably find my exams hard and long. This is a difficult topic. I will argue that if a student really understands the material, there will be enough time to complete the exam without having to rush through it. However, since most students don’t completely understand the material, they struggle with one or two questions and so find themselves pushed for time. I think this is alright. This goes together with it being alright for an exam to be hard. I have no problem giving an exam in which the best student gets, say, 90%. I do not expect to give grades according to the scheme: “70 – 80 = C, 80 – 90 = B, 90 – 100 = A.” I think every exam should have a question which really pushes even the best students, and perhaps most of the class will struggle to make any progress on that question. As long as I am aware of the fact that it is a challenging question, it does not make the exam unfairly difficult. It simply shifts the spread of scores and opens a window at the top end to challenge the best students. I frequently get comments that my exams and quizzes “require students to master the material and test whether they really have mastered it.” I think this is what an exam is supposed to do.

The downside of challenging exam and quiz questions is that students get discouraged, and this is certainly something I want to avoid. I will endeavor to keep a good balance between problems for which the strategy is obvious (not to say the problems will be easy!) and problems for which you have to stop and think hard about how to tackle them.
Regarding partial credit: this is another difficult topic. Most students feel like they
deserve more credit for an answer – I think more honestly, most students want more
credit for an answer. I have to decide what it is I am testing for in a given question and
then award credit in accordance with that. More importantly, I have to award credit for what is on the page! Even if you “have the right idea,” I have to see it written down. I
can’t give credit for something that is not there.

Some students want the opportunity to “make-up” or redo exams when they have done poorly. I am not in favor of this policy and will not (in general) instigate such a policy. Life simply doesn’t work like that – if you perform poorly, you have to live with the consequences. In this case it means you have to buckle down and work harder for the remaining tests to make up for the poor performance. Most of my grading schemes have a “safety net” which allows for a single poor performance to affect your grade minimally.

On that note, some students find my “grade formula” confusing – how much is the homework worth, how much are the quizzes worth? The scheme is always precisely spelled out on the syllabus. If you find it confusing, then you should come and ask me about it.

**Homework.**

It is now very rare that a grader is available for any classes I teach. Of course, I still assign homework; for most lower level (100-200) classes I will not collect or grade homework. It is precisely in these classes that students comment the most frequently that they wish homework had been required/graded because then “it would make them more motivated to do it.” Well, I’m sorry, but it’s time to take responsibility for your own learning and do the work necessary to succeed, regardless of external motivation! Homework is the most important work you will do! It is impossible to succeed in math classes without working through examples and exercises.

This leads to another comment which I receive on occasion. I usually assign homework to be completed weekly (or sometimes every two weeks) and students have commented that they would like homework assignments to be smaller and collected more frequently. If you feel this way, then it is up to you to treat the assignment as if it were due every few days – don’t leave the whole assignment to be done in one go at the end of the week; of course it seems big if that is your approach! Work on the assignment day by day, tackling the questions which are relevant to the material we are learning in class. Once again it is an act of taking responsibility for your own learning rather than relying on the teacher to control the process.

In upper level classes I will sometimes grade a small selection of the homework which I collect and this contributes toward the final grade.