STATEMENT OF TEACHING PHILOSOPHY

Dan P. Guralnik

I have been engaged in university teaching since October 1994. This includes my time in the Israeli military. Overall, I have taught various courses as a TA at the Technion-IIT Mathematics Department for about 11 years, followed by 6 years (the current academic year included) of instructorship in the US (Vanderbilt University and University of Oklahoma).

In addition to the above, I had had some experience organizing “math club” type activities for school children in an afternoon school (Summer-Fall 1997, Karmiel, Israel), and had about one year’s experience (three semesters) teaching Mathematics to high-school students and technicians (grades 9 to 14) in a military technical school during my military service.

Most of my work as a TA at the Technion was aimed at Mathematics students or Engineering students. I have also taught to graduate students of the Electric Engineering department for two semesters.

My duties included the preparation and conducting of weekly frontal presentations (of both theoretical material and exercises) up to five hours a week, keeping office hours (usually up to 6 hours) for individual work, inventing homework assignments and the grading of homework papers, tests, and final examinations.

As stated in my CV, I was also assigned to write instructional texts (Topology, Group Theory exercise books) for the use of other TA’s and advanced students.

During my Ph.D. studies, being involved in writing examinations and maintaining my courses’ websites has become standard. Most courses I taught (except for standard calculus and linear algebra) are analogous to honors courses and to graduate courses at the qualification level in the US University system.

While in the military I took a course named “Teaching Methods for Officers”. This course influenced my teaching greatly. Perhaps most notable was my transition to planning my work according to a hierarchy of specific goals the students need to achieve (instead of a the ‘here is an interesting exercise’ system I used prior to taking this course).

As a result, in class, the focus of my exposition shifted from illuminating technical subtleties to exploring the reach of core ideas and basic methods, while relocating technicalities to homework exercises and extra-credit work.

For example, rather than spend two hours of discussion on a full set of pathological examples of topological spaces satisfying the $T_i$ separation axiom but not $T_{i+1}$ (the way I did in Spring 1995 when I taught a discussion session in Topology for the first time), now I would invest a quarter of the time in one or two such examples, and the rest in applications of these notions to situations where the difference has very tangible implications.

If I were to state the ideas guiding my preparation for class at this point of my career, I should probably state the following:

- In class, I prefer to maintain each of my presentations within a framework set for answering a selection of questions aimed at providing a better – oftentimes visual – understanding of the interactions between the concepts currently studied.
• The above selection of questions must always be useful – both in the sense of applications or in the sense of providing a good set of tools for dealing with further course material.

• I tend to make my presentation more exploratory than expository, trying to create a miniature research experience for the students by emphasizing the importance of poising auxiliary questions and experimenting with examples and counter-examples.

• Out of class, I try to construct the course so that it is partially based on the students’ homework assignments. I like to assign homework problems in sequences spread over several consecutive assignments, with the aim for the students to observe at least one or two threads, or ‘applied’ projects. As a result, by the end of the semester the students will have obtained several large-scale examples demonstrating the large scale structure of the course material and the way in which it produces some interesting or surprising applications.

On the organizational side, I have grown fond of grading policies in which homework is given a lot of weight, with many opportunities for extra credit work on a higher level (harder, deeper bonus problems that have to be handed in separately).

My personal view of tests and quizzes is that they should serve as a means of keeping the students working on their homework, as well as a means of verifying the students’ ability to express themselves in an organized and precise fashion. As a result, for my tests and exams I prefer problems that are technically simple, but layered, requiring the student to explain the connections between the stages.

In my work *tete-a-tete* work with students I encourage the students to solve problems on their own, while I help them navigate through the problem by asking questions.

I keep an open door policy, and try to build my relationships with students to last beyond the end of the semester, so that the students feel free to approach me with mathematical questions and other concerns long after their final grades have been issued. This has resulted in several mentoring type relationships and some very valued friendships. A list of student references will be made available upon request.

Dept. of Mathematics, University of Oklahoma, Norman, OK 73019

E-mail address: dan.guralnik@ou.edu