

Statement of Teaching

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1 Overview

I have been employed as a postdoctoral fellow and course instructor at University of Toronto at Mississauga since July, 2006. Before this, I was a teaching assistant at the department of mathematics of Queen's University from September, 2001 to April, 2006. Between September, 2003 and April, 2006, I was a teaching fellow. In this statement, I would like to discuss my teaching experience and how it has helped me to form a sincere commitment to an academic career. I would like to mention my basic policies as a classroom instructor and how my students have responded to my teaching.

2 Duties as an instructor

At University of Toronto, I have taught two courses, namely, *Calculus* and *Introduction to Mathematical Proofs*. At Queen's University, I was responsible for teaching two courses, namely, *Introduction to Linear Algebra* and *Complex Analysis for Engineers*. Teaching these courses has been a challenging and immensely rewarding experience. *Introduction to Linear Algebra* was designed to be a course for non-math majors. The aim of this course was to teach linear algebra to students from diverse academic backgrounds: biological, social, natural and engineering sciences. Though basic definitions and important theorems were meticulously presented in class, my primary goal was to discuss a large number of examples and challenging problems, which enabled students to understand how linear algebra is applied in our daily lives. Without watering down the course material, I tried to put across seemingly abstract mathematical ideas in a concrete way.

Complex Analysis for Engineers was aimed at introducing complex analysis to students in Electrical Engineering and Engineering Physics. Despite coming from an applied sciences background, the students in this class were extremely interested in grasping the theoretical aspects of this subject. One of the important topics of this course was complex integration, especially the Cauchy integral formula and its multifarious applications.

Calculus was a standard first year course in calculus covering differential and integral calculus, sequences and series and differential equations.

Introduction to Mathematical Proofs was a first year course for students who intend to specialise in mathematics and computer science. The aim of this course is to understand, use and develop precise expressions of mathematical ideas, including definitions, theorems and proofs. Topics covered include set theory, logical statements and proofs, induction, combinatorics and elementary number theory.

3 Important aspects of my teaching policy

As a classroom instructor, I have endeavoured to follow some important rules, as outlined below :

1. I believe that teaching is a two-way process. The instructor should encourage classroom discussion and be willing to answer questions of students. Difficult concepts should never be rushed over and students should be given ample time and opportunity to digest new ideas. From time to time, the instructor should pose relevant questions to the class. This keeps the students attentive and motivated.
2. At the end of every lecture, I assigned problems for self study. The students were also given challenging assignments. I repeatedly emphasised in class that to become proficient in mathematics, one must practise it on a regular basis. *It is practice first and knowledge afterwards.*
3. I made myself available for discussion outside class. Apart from attending tutorial sessions, students were encouraged to approach me with their mathematical difficulties during my personal office hours. I made it a point to interact with shy and hesitant students regularly. Undergraduate years are a very crucial period for a student and a harsh comment from an instructor, especially in mathematics, can ruin the self-confidence of students. Therefore, one must be very patient and encourage students to overcome their inhibitions. This rule, in particular, worked very well. Some students, who came from a social sciences background, not only excelled in the course but also overcame their fear of mathematics.
4. Every class has some extremely gifted students, who wish to learn more than what is being taught in lectures. Thus, I assigned several bonus problems in both the courses. For example, in the Complex Analysis course, students were asked to try and prove that

$$\zeta(2) = \frac{\pi^2}{6}.$$

The students of this class submitted 8 different proofs of this fact. Another problem for which I got a good response was about recursive relations between Bernoulli numbers. I encouraged students to browse through journals like the American Mathematical Monthly and Mathematics Magazine.

4 Student feedback

My teaching policy, so far, has been appreciated well by my students. Here are some comments that I received in the student evaluation reports :

1. Kaneenika is a great instructor. She clearly worked very hard to ensure that each and every student got the most they could out of this course. She made it easier to

approach her outside of class, easier to ask questions in class and made it feel like she was concerned for each of us individually.

2. Kaneenika was an excellent and engaging teacher. She was always willing to explain things again and again if necessary until understood.
3. The assignments are hard and that means that more time is spent doing problems on a regular basis.
4. This is my fourth and final year at Queen's and I must say that I have never had an instructor put in so much effort.
5. She made us feel like equals and was very willing to help clarify material in class.
6. Awesome prof, that's all I can say. She's always ready to help, and is the one prof who truly wants to see her students do well. Take any class with her if you're lucky to get the chance.

5 Conclusion

From my teaching duties and also by carefully observing my own instructors as a graduate student, I have learnt the following important lesson : An instructor can positively influence his or her students by adequate preparation as well as by *conveying a passion for the subject*. In the future, I look forward to teaching undergraduate as well as graduate level courses. I hope to further enhance my teaching abilities and undertake new duties enthusiastically. Other than the capacity for original research, a professional mathematician, in the words of Hyman Bass, should possess *finely developed and adaptable skills for teaching mathematics at diverse levels, from introductory undergraduate courses to advanced graduate research courses and seminars*.

6 List of my teaching duties at Queen's

Teaching	Instructor for Math 112- Introduction to Linear Algebra, Winter 2006
Duties at	Instructor for Math 228-Complex Analysis for Engineers, Winter 2005
Queen's	Instructor for Math 112- Introduction to Linear Algebra, Winter 2004
University	Teaching Assistant for Math 391- Elementary Number Theory, Fall 2003
	Teaching Assistant for Math 110-Linear Algebra, Fall 2002 and Winter 2003
	Teaching Assistant for ApSc 172-Linear Algebra for Engineers, Winter 2002
	Teaching Assistant for Math 120, Introduction to Calculus, Fall 2001 and Winter 2002