TEACHING STATEMENT

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The process of communicating ideas to others has always been fascinating to me. I was myself fortunate to have had some great teachers towards the end of my masters' coursework and my first year in TIFR. In particular, a fantastic measure theory course in the first year of my own M.Stat. rekindled a dying interest towards academics. When I teach now, these experiences remind me of the responsibilities I have as a teacher and the possibility of making a difference through teaching well.

I dabbled in informal tutoring during the final year of my masters' program in ISI and continued this during my Ph.D. life in TIFR. In TIFR, I was also involved in visiting the neighbourhood slum twice a week to teach the school children there (I did this twice a week for 5 years) apart from the institute outreach programs. Yet, it was only after joining the University of Kansas as a visiting assistant professor and teaching formal courses (3 an year) that I found out how much I liked to teach. In fact, last year apart from my usual teaching load, I ran (extra) reading courses for graduate students. A list of the courses I have taught can be found in my vita and some details are on my website.

Like most American universities, KU collects detailed student feedback about courses and my teaching effectiveness has consistently increased over the semesters I have taught here, with an average of 4.0 (out of 5.0), which compares favourably with the courses taught in the mathematics department at KU (more details can be provided if required). In November, 2013 I was the youngest amongst about 25 faculty members university-wide nominated by students in my honors classes for the "Outstanding Honors Course Award", the only member of the mathematics faculty to receive a nomination.

For each course that I teach, I create a detailed course homepage on my website. At the beginning, I broadly decide the goals of the course and upload a paragraph about what a student enrolled in the course should expect to know at the end of the course. Very often this could be a group of concepts or the statement of a theorem. The precise material taught and the presentation of the same is decided once classes start, depending on the mix of students in the class.

For example, in a generic undergraduate vector calculus class (which has students from departments as diverse as engineering, music, geology, biochemistry, ...), I typically emphasize that the course will end with the statement of Stokes’ theorem and that students should end up being able to compute basic line integrals and surface integrals.
In such undergraduate courses, I also attempt to make use of technology when possible. For this purpose, I have acquired and made figures using sage and mathematica, as well as other online graphics tools which help in illustrating concepts like vector fields, curvature, phase planes, etc. I also illustrate the use of these mathematical concepts as a means of explaining natural phenomena (for example, Kepler's laws) which helps to emphasize "the unreasonable effectiveness of mathematics in the natural sciences" and hence its importance. The same course taught to a honors batch of students will be more demanding (for example, the students might be asked to turn in a project as I did with my honors students in the differential equations and calculus II courses), a bit more rigorous and also periodically emphasize other mathematical concepts.

At a slightly advanced level (upper undergraduate and beyond), the course would be much more detailed and theoretical, and the students would be expected to understand rather than just compute. I believe that mathematical language, rigour and abstraction are the key components on which the mathematical edifice is built. Being comfortable with mathematical language is a key component to understanding mathematics at all levels, and hence, I believe in the effectivity of lots of examples and assignments which increase command over mathematical vocabulary as well as problem solving skills. In more advanced courses, the examples and assignments should also promote the goals of mathematical rigour and abstraction.

I like to form a personal rapport with as many students as possible. Independent of how large my class is (so far the largest has been 60 students), I make it a point to remember names and encourage interaction in the classroom. I maintain regular office hours to help students outside the classroom and very often am available for discussion with them even outside the listed office hours.

Having done my bachelor’s and master’s education in probability and statistics, and later having done my doctoreate in mathematics at T.I.F.R., I look forward to teaching a broad range of statistics, probability and mathematics courses.

Last Updated : November 18 , 2013