

Teaching

I have taught the following courses which are relevant to the visiting position.

Logic and Computation at the University of Cape Town (2010).

This was a first course in logic that ended in the completeness theorem of predicate logic. Student abilities in the class were very mixed which meant I had to carefully structure the course. I slowed the lectures down a bit and moved harder questions to the tutorials. One of the strongest students sent me an email at the end of the term:

I have enjoyed your maths course the most of all the maths courses I've taken so far. Even more than the content, your delivery was excellent. I made the decision during one of your lectures to do honours in mathematics and computer science.

Calculus at Cornell (2008 - 2009).

This was essentially a second course in calculus for engineering students that follows a textbook very closely. After each lecture I reflected on how I could improve presentation of the material. This usually involved improving the pace, refining what to write on the board, and finding better ways to break up the material into chunks that the students could follow. These students were generally capable of acquiring, on their own, the skills to work routine problems. Consequently my main goal was to get them to reason mathematically, both verbally and in writing. I noticed that students are very sensitive to the wording I use. I keep a list of phrases they respond positively to, such as 'can anyone help A with her answer?', 'can you explain B's idea to me?', 'what do you mean by X?', 'are you sure?', and 'who will summarise today's class?'.

I received reviews to confirm my strategy had the desired effect:

Professor was very well prepared ... Instead of memorizing formulas, he helped us understand what we were learning, why we were learning it and why it was useful.

Logic and computation in finitely presentable infinite structures (2006).

This was a five-day advanced-level course co-taught with V. Goranko at the 18th European Summer School in Logic, Language and Information, University of Malaga.

Various courses in the Department of Computer Science, University of Auckland.

I have taught modules of the following undergraduate courses: Discrete structures in mathematics and computer science (2007), Mathematical foundations of Software Engineering (2007), Introduction to Formal Verification (2003), Automata Theory (2002).

Supervision

In 2009 I supervised six exceptional undergraduate students for a two month research experience (REU). We worked on two projects and have interesting results, some of which have been submitted to *Theoretical Computer Science*. During this time I learned the value of giving students a few days to brew and filter their ideas before group discussions. Overall it was a rich experience for both me and, I gather, for my students. One student expressed to me that the experience helped him decide to pursue a career in research.

In 2007 I collaborated with a number of graduate students at RWTH-Aachen, resulting in two co-authored publications at STACS 2008.