Teaching Statement
Giles Hooker

Through my career both at Cornell and McGill universities, I have taught classes ranging from an introductory undergraduate course through advanced electives aimed at statistics PhD students; five of these were developed as new, as opposed to taking over existing courses. At Cornell I have also helped to direct the graduate consulting class. Additionally, I have given professional workshops and short courses, served as teaching assistant and private tutor and spent six months teaching English as a second language in China. During these experiences I have learned a great deal from my colleagues and even more from my students. I am committed to excellence and innovation in the classroom and to achieving positive educational outcomes across all ranges of ability.

I view the keys to statistics instruction as being relevance and empowerment. A central difficulty for statistics is that the techniques employed – whether simple calculation or complex proofs from measure theory – are not directly related to the problem of interest. It is therefore vitally important to motivate what is being done and why the extra level of abstraction is necessary. I believe that the key to retaining interest is relevance; Students learn better and retain more when they are motivated and excited by class material and can see why it is important or useful to them. This is as true when teaching asymptotic expansions to a PhD student as it is covering the t-test in an introductory class. I have constantly sought ways to personalize class material; from homework problems asking students to “describe an application of this technique to data relevant to you” in introductory courses to class projects enabling advanced students to relate the material to their own research directions.

The second key to statistics education is empowerment: providing the students not only with statistical or mathematical tools but with evidence that they are able to use them intelligently and creatively. This means employing some less structured homework problems, open ended class discussion and course projects that demand students think through the application of a method without a recipe for the correct answer. Many students find this painful at first – and it certainly requires more time and effort in grading and assisting students – but it ultimately instills confidence in and a deeper connection with the material.

I am, of course, dedicated to actively soliciting feedback from students early in a course and adjusting course presentation and materials in the light of their comments.

I am confident of my ability in and enthusiasm for teaching classes from an applied to a theoretical level across a very broad range of statistical topics and to students from first year undergraduate to advanced PhD. If given the opportunity, a particular class I would like to develop would be in statistical methods for nonlinear dynamic systems models. This material is of recent statistical interest (including my own research) and the course would encompass applications in epidemiology, ecology, immunology, neurobiology and chemical engineering. It would employ techniques from smoothing methods and particle filters as well as ideas from attractor reconstruction. It could be made suitable for a range of interests, from mathematically inclined graduate students in application areas to PhD students in statistics and applied mathematics.
Specific Teaching Assignments

**Spring 2012** BTRY 3520: *Computational Statistics*, Cornell University. This is a new class that I am developing as a core component in the Biometry and Statistics major. It will cover basics of programming, numerical optimization and integration, simulation and random number generation and bootstrap and permutation methods. It will typically be taken by sophomores or juniors.


**Spring 2009/2010/2011** BTRY 6020: *Statistical Methods II*, Cornell University. Introductory statistics course aimed at graduate students in biological sciences as well as Biometry and Statistics majors and Statistics professional masters students. Linear models, generalized linear models, design of experiments and random effects.

**Summer 2010** International Workshop on Statistical Modeling *Short Course on Functional Data Analysis*. One day, 6-hour introduction to functional data analysis methods and software for practicing statisticians.


**Spring 2008/Fall 2011** Cornell Statistical Consulting Unit Workshop: *Introduction to Functional Data Analysis*. Two hour short course featuring software and ideas.


**Fall 2007** BSCB 694: *Statistical Learning Theory*, Cornell University. Elective PhD level class.

**Spring 2007** BSCB 694: *Functional Data Analysis*, Cornell University. Elective PhD level class.


**Winter 2005** Math 204: *Principles of Statistics II*, McGill University. Introductory undergraduate level class; biology, psychology and (some) mathematics majors.

**2001 - 2004** *Teaching Assistant*, Stanford University. Introductory through PhD level classes; grading, labs and occasional lectures. Included distance learning classes broadcast through the Stanford television network.
The Department of Statistics at Stanford University awarded me an prize for excellence as a teaching assistant in 2003 and its over all award for teaching assistants in 2004.

**2000** *English Teacher*, Chiang Chen Industrial Institute, Heze, China. In charge of improving English fluency at a technical institute. I was awarded the Shandong Provincial Award for Excellence in Teaching. I also founded an English-language essay competition to encourage students’ writing skills.

**1999** Tutor, Math 100, Mathematics Dept, Australian National University.

**1997** Mathematics and Philosophy Tutor, Burgmann College.

**Student Feedback**

- *I really appreciated that Giles allowed (and encouraged) us to ask questions during class and that he was willing to spend extra time on a topic if we were confused. Applying concepts from class to our own data sets was a great way to help me understand the material better, and overall I liked the structure of the homework; it helped us practice the material we learned in lecture, without being excessively burdensome. While I hope that I don’t have to take another statistics course, if I did, then I hope that I can find an instructor who is as good as Giles.* BTRY 6020, Spring 2011.

- *This was a challenging course and I worked extremely hard to do well, but I loved every minute of it. It was one of the most useful courses I’ve taken as a graduate student. I can’t imagine working with research data any longer without having taken this course.* BTRY 6150, Fall 2008.

- *I think this is the first time that I have done something practically useful at university.* Math 204, Winter 2005.