Teaching Statement
Saad Qadeer

Over the course of my teaching career, I have developed methods and techniques that I believe are singularly effective. These can be broadly characterized as meticulous organization, a positive attitude and an emphasis on conceptual problems.

My organization comes to the fore in the design of a lecture. Before every lecture, I like to step into the students’ shoes and challenge myself to frame the material in a way that would hold my interest. I start off by highlighting an important problem to be solved or a crucial gap in our understanding and the lecture aims to resolve it. As an example, I posed the problem of using velocity measurements from a fit-bit for inferring the distance travelled to introduce numerical integration and the subtleties associated with methods of different orders. I also endeavor to break up the material into small digestible pieces, each of which culminates at an important result and is followed by plenty of worked examples. This ensures that the students understand the big conceptual picture and allows fast and slow learners to stay on the same page. Finally, I aim to give the students an intuitive way of thinking about the topic. This could be by way of an example that captures the intricacies or by providing physical interpretations. For instance, while covering Green’s theorem, I explored the intuitive notion of the curl of a vector field as the amount of spin at a point and added together all such spins to obtain the circulation at the boundary. This seeks to accommodate different learning styles and improve the use and recall of techniques that may otherwise be seen as too abstract.

I have observed that students are more receptive if the instructor has a warm helpful attitude. I make a point of memorizing the students’ names by the end of the first week. During every lecture, I pause at several points to ask the students for questions. This is framed in a welcoming way so they know that their questions will be accorded respect and not be discarded as meaningless. I believe that even ill-posed questions present a teaching opportunity as they reveal gaps in their understanding that need to be bridged. I emphasize that no questions should be seen as “stupid” or “time-wasting” as it is highly probable that many other students are confused by the same point. In addition, I get the students to work together every now and then. Not only does this foster a collaborative approach but also allows me to interact with them on a one-on-one basis. In order to address the students’ questions as they get deeper into the material, I hold extensive office hours. Finally, I encourage my students to email me their questions and I try to respond immediately. This shows the students that the instructor cares about their progress and, as a result, they are more willing to put in their best efforts.

Problem-solving is an essential component of learning mathematics but this is treated by most students as a chore because of an emphasis on trite problems. The students find little reason to solve problems the like of which they will never encounter outside the course and hence fail to be stimulated intellectually. I believe in challenging students by focusing on problems that require a subtle understanding of the material or by exploring problems from different domains. As an example of the latter, while teaching about derivatives in several variables, I introduced convective derivatives as they appear in fluid dynamics. By moving beyond elementary applications, the students are also better at abstract reasoning, future courses and at appreciating the richness of
the mathematical landscape.

These ingredients come together to form an effective teaching package. My good work was also recognized by the Mathematics department when they recommended me for an Outstanding Graduate Student Award at the end of my second year of graduate school. Over my teaching career, my evaluation scores have consistently been over 6/7. The comments frequently emphasize the very traits that I mentioned above. Here is a representative sample of such comments:

- “Saad was very helpful throughout the entire course. Saad made himself available to students in and out of class; in both office hours and even after hours, he responded to emails quickly with thorough explanations. Saad was a very effective instructor, clear, concise and passionate. He really cares about his students and is overall very organized. His homeworks were challenging and required thought/critical thinking, definitely harder than the book work. Quizzes and midterm were more than fair. Thank you for being so helpful and attentive and for always encouraging us to ask questions.” (Calculus and Analytic Geometry; Summer 2014)

- “Never condescending, very clear explanations, willing to rephrase explanations if the concept remains unclear, always has a list of topics to explain if class does not have any questions. Saad is an excellent GSI. (Attends lecture in order to address any specific questions regarding the lecture.) Basically, he is a magical unicorn of knowledge who rids all students of their ignorance.” (Calculus II; Spring 2015)

- “I dropped it during the school year because the class size was big, there were few office hours, classmates are rude and the professor is not very good at explaining concepts. I feared math 1a but must take it as a prerequisite. This course is completely different in the summer. Saad is an inspiring instructor who has great patience and a natural talent explaining mathematical concepts. I felt like I don’t even need to memorize formulas because I understand them so well.” (Calculus I; Summer 2015)

- “Very prepared, incredible useful during office hours and always available, answers emails about questions quickly and explains concepts so well, could practically be a professor at this point, lectures during discussion are very clear and well organized, 11/10, Saad is the best” (Linear Algebra and Differential Equations; Fall 2015)

- “Saad is always incredibly prepared and organized. He takes his time when helping and offers extremely relevant examples. Saad makes himself so available and really made a difference in the effectiveness of learning the course material.” (Methods of Mathematics: Calculus, Statistics, and Combinatorics; Spring 2016)

- “SAAD IS AMAZING. he can answer any question and comes with a structured lesson plan every time. He’s also super nice and answers all our dumbest questions with respect, and keeps explaining things until we totally understand. in terms of volume of content, I think I learned a lot more from saad than from professor frenkel. I think saad is actually a math god.” (Multivariable Calculus; Fall 2016)

- “Saad is a very good lecturer and very helpful during the class and his office hours. He could mange the time to teach us the topics and also solve some sample questions during the class. Those sample questions were very helpful. He mainly focused on concepts but not exactly the text book which was a very good idea.” (Numerical Analysis; Summer 2017)