

TEACHING STATEMENT: ELOÍSA GRIFO

Were it not for the influence of a few exceptional teachers and mentors, I would have never chosen to pursue a career in Mathematics. I find that good teaching is very important, and I try to both emulate some of the exceptional teachers who I have observed over the years as well as look for new ways to engage with my students.

During my time as a Masters student at IST, in Portugal, I had a chance to teach recitations for several sections of Complex Analysis and Differential Equations; my responsibilities included a weekly 75 minute problem session with each group of students (about 40 each), writing and grading weekly quizzes, and grading exams. My first semester at UVa, I had a similar experience, teaching recitations for Calculus III. Also at UVa, I was the instructor of record for a few different classes: Applied Calculus II (for two semesters) and Calculus II. These courses are coordinated in the sense that the syllabus is common to all course sections and all sections take common exams. However, instructors for these courses are completely responsible for day-to-day class content, including whether or not to use class time for lecturing, group-work, student presentations, quizzing, etc. Instructors also determine the content and frequency of any written homework assignments, whereas online homework is required. As an instructor for Calculus II, I also oversaw the work of another graduate student, who taught the recitations for my class. During the Spring of 2016, instead of teaching a class, I assisted Paul Bourdon, the Director of Lower Division Courses, in coordinating Applied Calculus II, running bi-weekly meetings with the 12 instructors for the course, and writing the exams and study guides for the class.

In my lectures, I try to create an engaging and active environment. In the Fall of 2016, I decided to use clickers in my lectures, asking my students an average of 5 multiple-choice questions per class at various points in the lecture. I would often repeat the same question twice: the first time around, each student would answer on their own; then, the students would be allowed to discuss their solutions in groups and resubmit their answers. I found that the students seemed to not only benefit from this method, but to actually enjoy it, and I was able to introduce several topics through provocative questions. Even though their clicker answers did count for 5% of their final grade, this was mostly participation based (in fact, virtually every student was awarded 100% of the clicker grade), and as such, I was pleasantly surprised to find that the students seemed to take the clicker questions very seriously. I discovered that students seemed to respond better to concept-based questions, and I found the discussions that followed such questions to be extremely fruitful, benefiting students of all levels. The student answers also allowed me to better evaluate how well the students were following my lectures, which was invaluable information. Overall, this was a very rewarding experience, and I am looking forward to trying this and other active learning methods in the future.

I feel passionate about sharing mathematics with both mathematicians and non-mathematicians, and I am always searching for better ways to communicate mathematics. At my undergraduate institution, I co-organized the Math student seminar *Seminário Diagonal*, which included not only the usual planning tasks, but also preparing the speakers and helping them practice their talks, all of them Bachelor and Master students who were often giving their first talk. I also co-edited a book (in Portuguese), aimed at the general public, whose title roughly translates to *Numbers, surgeries and*

tie knots. The book consists of 32 articles, of about 10 pages each, written by 33 young portuguese mathematicians, assuming only a high school level math education. I also wrote one of the articles, which introduces group and ring theory, and discusses why there is no algebraic expression solving general quintic equations. At UVa, I have been a part of the Math Ambassadors program, for which graduate students visit 5th and 6th grade classrooms in local schools and direct a one to two hour activity. I have been in many such visits, covering topics such as Euler's formula, Möbius strips, or Conway's Game of Life, and I always learn something new. At UVa, I mentored an undergraduate student for two years, who is now a Math graduate student at the University of Denver. We met once a week, discussing notes and books she read through on various topics, and I encouraged and helped her to apply to graduate school.

My experiences of sharing mathematics outside of the classroom have been very important to me, and I will continue to search for opportunities to do so throughout my career. I will also continue to relish opportunities to communicate mathematics to my students in the classroom and look forward to experimenting with new instructional approaches as I seek to provide my students with the best possible learning environment.