

TEACHING STATEMENT

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As can be seen from my curriculum vitae I have been teaching for quite some time, and I can honestly say that I thoroughly enjoy it. I have taught preparatory courses for the Physics Olympiad qualifiers for high school students, single and multivariable calculus to engineers, physicists and pre-med students at the undergraduate level both in Iceland and in the US, and organized courses for undergraduate students in mathematics at Reykjavik University (RU), in Iceland. I will give more detail on my teaching at RU below.

In every class I have ever taught there has been a common denominator: The excitement, enthusiasm and drive of the lecturer is directly transferred to the students and translates into how positively the students view the material of the class. Therefore, I always try to convey my joy for mathematics as I am teaching. I try to be colloquial and give the students a bit of history behind the material as well as hinting at more advanced phenomena that are hiding in the background. I also try to give them connections to other courses they have previously taken.

Since the fall of 2008 I have had a part-time teaching position, along with a postdoctoral position since the fall of 2009, at RU. Since that time I have organized courses on topics such as multivariable calculus, metric spaces and topology, complex analysis, and introductory algebraic geometry.

I would like to go into a bit of detail on the course on multivariable calculus. In cooperation with one of the department heads of the mathematics program, we decided that I should emphasize the use of computer visualization and programming for problem solving. The computer algebra software we chose was SAGE¹. The students were made to turn in four very involved problem sets over the semester that often involved writing programs in SAGE, or using it to visualize the problem. The lectures were rather traditional except we spent at least a quarter of the class working on problems together. The in-class problems were the conventional problems one encounters in calculus but the students were encouraged to use SAGE as an aid. The course was a great success: a Teaching Coach conducted a survey to gauge the satisfaction of the students and it came out with very positive results. The students noted that when they were reviewing a new definition from the book at home they often used SAGE to look at examples; and that they had begun utilizing SAGE on their own in other courses, such as on linear algebra, and probability theory. Examples of the student's homework can be seen on my teaching page, <http://web.mac.com/hemsa/Ulfarsson/f08-E-208-CALC.html>. After the experience of teaching that course, I believe using computer algebra software to encourage students to interact with the subject they are learning gives them a new way with which to understand the material and experiment on their own. I also think that it is becoming increasingly easier to utilize software of this kind to teach mathematics as the tools become more powerful and applicable to more fields of mathematics.

To sum up my feelings about teaching, I'd like to say that I look forward to teaching any kind of student any type area of mathematics. Mathematics is such a beautiful subject that I have always found it a joy to share it with others; and what good would mathematics be if we could not explain it and teach it to others?

¹SAGE is freely available at <http://www.sagemath.org/>.