Statement of Teaching Philosophy

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Teaching has always be an important part of my student and academic life. Even during my undergraduate studies, I spent a lot of time providing private tutoring to high school students. It was really important for me to do so because I think that transmission of knowledge is one of the most important duties of a researcher (together with research of course).

Then, during my last undergraduate year, it was for me very natural to join the "Tutorat" team of my university. It aims to give free tutoring to first and second year's undergraduate students, a very important task because of the difficulties they meet when leaving high school for university: to work on their own, live alone and become independent. I spent a lot of time in this service, eventually becoming in charge of it.

I stayed two more years in the "Tutorat" team, while I was preparing my Master degree, as well as the "Agrégation de mathématique". This is a high-level competitive examination for French high school and "classe préparatoires" teachers, and very important for me considering that teaching will take at least half of my future working life. I learned to prepare structured courses and to have a more global view of teaching. Indeed, I think this is essential to have long-range perspective when doing lectures.

Finally, I started my Ph.D. and gave a lot of different lectures: *Differential calculus* and *Linear algebra* at an engineering school (INSA de Lyon), then *Differential and multivariable calculus* at undergraduate level. I also taught *Numerical analysis* and *Complex analysis* to last-year's undergraduate students. I learned a lot about teaching thanks to all these work experiences, and particularly that mathematics are a very challenging subject to transmit.

I really believe that one should start every courses with concrete example or an historical fact, specially if the audience is not planning to do theoretical mathematics. That helps the students focusing on the subject, and give more substance to the course. For example, during my numerical analysis lectures, when I introduced methods to compute eigenvalues and eigenvectors, I saw that my class was annoyed by the technique and so I presented Google's "Pagerank" algorithm, which is roughly speaking (in its first version at least) a simple application of these notions. I gained the attention of nearly all my students, just because of this little remark.

I also think that students need to ask questions to the teacher, and that it is one of the better way to help them improve their skills. For me, if someone wants to ask a question, there is a lot of chances that another student in the classroom is also wondering about the same thing. The only bad question is for me a question which is not asked. Even if they are completely wrong, I always try to encourage my students to keep on asking, without belittle themselves.

Dullness of lectures is also a major problem. Finding the good balance between exercises, questions and comments is difficult and I think that could only be achieved by practicing, exactly like what we do in research. Teaching should be a way to encourage excellence for both my students and myself!