

# Teaching Statement

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In my career I have come across several great teachers. They have inspired me at various stages of my life. My own teaching sense is derived from them though I would never compare myself with them. While teaching I always try to make mysteries look simple which is as joyous as discovering a new lemma.

I would say that I love teaching. I like watching a subject getting evolved and getting developed in the class. I have been a graduate student at a Research Institute where we are not required to teach. In spite of that I have taught and conducted tutorials whenever opportunity presented itself. I have mostly taught in summer schools organized for motivated undergraduate students. I have also been tutor of a nation wide programme called Advanced Foundational School (AFS) to train beginning graduate students. Apart from these I have delivered several short courses in department, mostly in a seminar series titled "Basic Notion Seminar". The audience were some undergraduates, fellow graduate students and faculty members.

To teach a course I start my preparation with identifying some standard books on the subject. I carefully select few theorems which I target as my goal of the course. I like the class to be interactive and encourage audience to ask questions. I generally divide my number of lectures in 3 to 1 ratio for theory lectures and tutorials. Generally I prefer to start with some standard examples of the subject and give basic definitions. I love spending a bit of time on basic concepts as it becomes easy to understand deep results later in the course. Mostly I prepare assignment sheets based on the lectures. I prefer to give examples as assignments to be worked out which illustrate some concept or give counterexamples to some of the statements with various hypotheses dropped. I believe in following philosophy: **Only you can make yourself understand, I can only help you to counter the wrong ideas.** Before coming to a big theorem which I would have already mentioned as my goal I try to prove corollaries, in the sense, applications of the theorem. I think it is a common sense that you call something "BIG" (theorem) if it has far reaching consequences, mostly surprising but not-easy-to-prove. I prefer to have tutorial sessions after 3-4 lectures for two reasons, one to give breathing space to the audience and another to clear confusions, if any, and solve exercises of previous lectures. I try to answer questions of audience/students on the spot. Generally, at the end of a lecture or tutorial session, I make a note of the questions asked by audience. One of the things I have learned from my great masters is to be frank with audience, i.e., if I do not know answer to a question I admit it frankly and promise to answer it later.

I illustrate my teaching method here by an example. In one of the short courses I was to deliver lectures on "Representation theory of Finite Groups" to undergraduate students and some fellow graduate students. I began with definition of Representations and gave few examples. Then I stated the theorem about number of inequivalent irreducible representations being equal to the number of conjugacy classes and the formula that number of elements in the group is equal to the sum of squares of dimensions of inequivalent irreducible representations. This facilitated me in two ways. While giving examples I could say (for example Abelian groups) that these are the only irreducible representations of this group or could challenge them that there are other representations still to be found. After proving above statement I changed my goal to prove Burnside's  $pq$  theorem. There was a hard job I did, some students in the audience did not know simple, semisimple rings etcetera. My assignments had separate section selfcontained developing the theory of semisimple rings side-by-side.

My method of grading depends on two facts. First how much you have understood and second can you perform. I give weightage to these factors depending on the motivation of the audience. For example, in summer courses for motivated undergraduate students I give more weightage to first factor. They have to solve exercises regularly and interact with instructor or tutor, let them know how much you understand. But while teaching to already committed graduate students the performance (on the stage) becomes necessary. As there is always a minimum level to be maintained, so quizzes and exams become necessary. The compulsory tutorials make audience interact.

What I gain after giving a course? To asses myself, I ask the audience to tell me directly about my teaching method and I explain to them my philosophy of teaching. Often, I ask them to write criticism about my course, assignments, work-load, teaching method etc. in a sealed envelope to keep secrecy. Finally I judge myself by taking average of the class performance, after all, I was teaching them not wasting their time!

I hope I will get lot more opportunities to teach. I also hope to improve myself as by several assessments of my audience I know I am not best yet. I am also trying to keep notes of all my lectures written in LATEX. I hope to be remembered as a good teacher, if not best, by my all students and audience. At least, I do not want to be remembered as a cheater. Finally hard work always pays off. So I remind myself to be consistent with it.