

First Year Report

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I came to the University of Arizona hoping to solidify my command of the fundamentals of mathematics and then move on to begin research in number theory. The first year has certainly been a lot of work but I think that I've achieved part of my first goal.

I haven't had a lot of time to learn anything significant about exactly what I would like to research but from what I've seen of the Professors in the department there are definitely people I could work with. Also some of the topics I've seen in the graduate student colloquium have been interesting.

I thought the analysis core course was very well lectured and had good, although challenging homework. I've never really liked analysis but I at least respect it now. One suggestion would be perhaps to include some complex analysis as some of the real analysis towards the end of the course seemed more specialized than other material in the first year course.

The algebra course was good, although it had some timing issues which are hard to avoid in a year long course. We spent a lot of time on linear algebra and didn't see more interesting material in enough detail. But I thought that the homework and lecturing were both interesting.

The geometry/topology course was the most difficult of the three. The concepts of differential geometry and smooth manifolds were entirely new to me and are a very complicated piece of machinery. I thought the Professor, although a very nice man and good mathematician, struggled to get across the details of how it all fit together. We also didn't cover the second semester material as much as I would have liked, not covering singular homology or deRham cohomology in detail.

Overall though, I worked through the material in all the three courses and learnt a fair bit. Sometimes I felt like it was too much work but I can see that it is meant to scare you a bit while also laying a foundation of knowledge.

I attended all the RTG lectures. Overall I thought they were good. The idea of exposing students to some exciting research and different people is a good one as it's easy to get sick of learning the same material from only three professors all year.

I thought the lectures on computational photonics were somewhat out of place in the (non-applied) mathematics program, at least for me. The lectures on mirror symmetry, quantum computing and group theory were all interesting but none really grabbed me as something I want to research. I haven't finalized a topic for next semester yet.

I taught College Algebra in both semesters which I thought was a good learning experience but it did take up a lot of time. Obviously there are funding issues but I feel that the teaching load of the domestic students (trig instead

of college algebra) would allow more time to do a better job of teaching in the first year.

The preparation before teaching I found quite useful, just to calm the nerves and give some idea of what to expect. On the other hand I found the MATH597T course to be not as useful. There was a lot of discussing how we feel about things which I think could have been replaced with more practical lessons. Topics like how to use D2L, calculator projectors etc. would be more helpful. (These are available outside the class but aren't compulsory so have the tendency to get lost in all the other activities).

I thought both my supervisors were very helpful and supportive. I have kept their comments on my lectures and my student's assessments of me but have not started a significant teaching portfolio.