

Geometry Seminar Math979 Course Description

This is a reading course on classic papers in differential geometry, mostly from the 60's, 70's, and 80's. People in the class will study papers and present them to each other. One goal is to develop a broad background in differential geometry. Another goal is to practice the skills of studying papers and giving a good presentation.

For the first 4-5 classes, I will go very slowly through a paper with lots of class discussion, and we will work on figuring out how the proofs work and how to explain the paper well in a seminar. We'll encounter some common issues and struggle with them, and I'll tell you about what I do when I study a paper and when I prepare a talk. After that, people in the class will start presenting papers to each other.

Some of the papers on the list are short, but others are longer and more complex, and it probably makes sense to present them over two or more classes. One option you're welcome to do is to work on a complicated paper as a team and give a series of lectures on it.

I made a paper list of suggested papers. These are interesting classic papers from a broad range of areas: connections between curvature and topology, PDE on Riemannian manifolds, index theory and its applications, foliations, and counterintuitive examples like the sphere eversion. You'll get to choose what you want to work on. The papers are mostly from the 60's to the 80's. This was a really interesting period in differential geometry, and I remember from when I was a graduate student that this period is a bit neglected in course offerings. The papers are too advanced for a first year differential geometry course. Some of them get mentioned in topics courses, but topics courses are often focused on more recent things.

Besides the class time, there will be office hours. You're welcome and encouraged to come talk to me about the presentation you're working on and whatever issues come up.