The Course: Math 208 - Manifolds I

1. When & Where: 11:40-1:15 MW in McHenry 1279

Instructor: Andrew Lee

1. Email: alee150@ucsc.edu

2. Office Hours: MTh 10:00 AM-11:40 AM and by appointment in McHenry 4178


Grading and expectations
Your grade in this course will be determined by the following:

- Homework – 30%
- One midterm exam – 30%
- Final exam – 40%

I will use a plus/minus letter system of grading.

Homework
Each week, I will post a PDF on my website with a list of problems for you to work on. Please TeX your answers and proofs. Late work will not be accepted. To accommodate for emergencies and unplanned absences, you may submit your homework via email before the due date, and I will drop the lowest grade in calculating your homework average.

Written homework is your main source of feedback on your progress in the course, and it is crucial that you take an active role not only in understanding the material but also in writing clear, organized proofs. There is a difference between the scratch work required to find an answer and a well-written solution. Each assignment will be due at the beginning of class on the date listed on the problem sheet. Problems will be graded out of 10. Not every problem will be graded, but you will not know in advance which will be marked. If your work is sloppy or disorganized, your grade may suffer.

Course Website and Grades
The course website is

[https://people.ucsc.edu/~alee150/teaching/m208](https://people.ucsc.edu/~alee150/teaching/m208)
I will post lecture notes and homework assignments there. For privacy reasons I will post homework and exam grades on Canvas.

Piazza
I encourage you all to ask questions on homework, either in office hours or on Piazza for online discussion. The website is

piazza.com/ucsc/fall2018/math208

Keep in mind that talking to others about a proof you have done is a bit different from writing a proof. The act of talking about a proof gives you the opportunity to show people how the ideas of the proof fit together, and what issues you had to deal with when working on the problem. One thing to develop in this course, besides your mathematical skills, is your ability to communicate mathematics to others.

I do encourage you to work with your classmates when working on homework for this class, but first work on the problem on your own. As a general rule, everything you turn in for this class should represent your own work; it should not be something that somebody else gave you without any work on your part, and it should, of course, never be copied from someone else’s paper. The goal is for you ultimately to write correct proofs to all the problems, so even if you need some help in getting to an answer, you should be able to write up a careful proof in your own words. If you do learn a substantial part of the idea of a problem from someone else, then please note that fact on your paper.

Exams
We will have an in-class midterm exam on Monday, November 5. There will also be a take-home component, where you will be allowed to consult class notes, the textbook, and homework assignments, but no other sources.

Topics:
We will cover some subset of the following topics during the quarter:

- Smooth manifolds and maps
- Sard’s Theorem and transversality
- Intersection numbers
- Orientations
- Whitney embedding
- Tangent and cotangent bundles
- Brouwer’s fixed-point theorem
- Degrees of smooth maps
- Borsuk-Ulam Theorem
• Vector fields and flows
• Poincaré-Hopf Theorem
• Lefschetz number and fixed points

Students with disabilities
UC Santa Cruz is committed to creating an academic environment that supports its diverse student body. If you are a student with a disability who requires accommodations to achieve equal access in this course, please submit your Accommodation Authorization Letter from the Disability Resource Center (DRC) to me privately during my office hours or by appointment, preferably within the first two weeks of the quarter. At this time, I would also like us to discuss ways we can ensure your full participation in the course. I encourage all students who may benefit from learning more about DRC services to contact DRC by phone at 831-459-2089 or by email at drc@ucsc.edu.

One more thing... I am committed to doing everything I can to help you make the most of this course. If you have questions, comments, or suggestions regarding our class, please do not hesitate to get in touch.