Math 128A - Classical Geometry Dan Cristofaro-Gardiner
Fall 2018
Lectures: TuTh, 1:30 - 3:05 PM, Engineering 2 194

Instructor Information:

Dan Cristofaro-Gardiner
dancg.sites.ucsc.edu
dcristof@ucsc.edu
Office Hours:
Tu 8:45-9:45, 11:30-12:30, Th 8:45-9:45, McHenry 4174

Course Description:

This is a one quarter, rigorous introduction to geometry. We will learn about different kinds of geometries, and different perspectives on geometry. Topics covered will include Euclidean, spherical, projective, and hyperbolic geometry, coordinates, and transformation groups.

Prerequisites:

To take this course, you should have completed Math 100, CS 101, or the equivalent.

If you do not have the right prerequisites, and would still like to take the course, I would encourage you to speak with me one on one as soon as possible.

Textbook:

The main textbook for the course is:

The Four Pillars of Geometry, by John Stillwell. It should be available online through the UC library.

Another good resource is Euclid's elements. This is generally considered one of the most influential books in human history! And, it is also available online, with commentary, here:

https://mathcs.clarku.edu/~djoyce/java/elements/elements.html

I will also be adding references to supplement some parts of the course; these will be uploaded directly to the website.

Teaching assistant:

Our teaching assistant is Jonathan Chi (Jbchi@ucsc.edu). Jonathan will have office hours, and will be announcing a time and place for these office hours soon.

Email and Website:

There is a website for this course, at https://dancg.sites.ucsc.edu/teaching/math-128a-classical-geometry/. The homework for the course will be posted there, as will any essential announcements, and some useful online tools.

I might also post clarifying notes from time to time; for example, if many students ask me a similar question, I will post a response.

You are encouraged to email me, or the TA, with any questions that you might have. I will try to respond to all emails with 48 hours.

Discussion section:

Our teaching assistant will be running weekly discussion sections to complement the course. This should be a valuable part of your learning experience, and I highly encourage you to attend. There are two sections: W 1:20-2:25 PM and Th 4:00 - 5:05 PM. Sections begin on Wednesday, **October 3**.

Academic accommodations:

To receive academic accommodations for a physical or learning disability, please submit an Accommodation Authorization Letter from the Disability Resource Center (DRC) to me as soon as possible (ideally within the first two weeks of the quarter), and contact PBSci Testing at **testing.pbsci@ucsc.edu** for arrangements at least two weeks prior to any exam. If you do not currently have accommodations authorized, you will be referred to the Disability Resource Center (DRC). You may contact the DRC by phone at 459-2089, or by email at **drc@ucsc.edu**.

Grading rubric:

Homework: 20%
One final: 40%
One midterm: 25%
End-of-quarter project: 15% [+ 5%] (the [+5%] means that if your project is especially great, I will give you up to 5% of extra credit)

Late work:

Please note that except in exceptional circumstances with appropriate documentation, or in line with an academic accommodation, late homework will not be accepted and missed quizzes or midterms can not be retaken.

Homework:

Homework will be posted to the course webpage, with a due date, and will be due at the beginning of class. The first homework will be shorter than usual, and due on **Thursday, October 4.** Homeworks will generally be due on Thursdays, schedule permitting. Your teaching assistant will grade and return your homework.

Pedagogy and advice:

For the most part, I will be lecturing during class time. However, I want to emphasize some principles and tips that I think are very important for this course:

- Don't be afraid to ask questions in class! The more you engage with the material, the better your understanding will be. Often, the deepest understanding comes only after many mistakes.
- Do lots of examples and exercises.
- Try to build your visual understanding of the subject. I suggest playing with examples with the computer if you can.
- Try to have fun! I will try my best to make the course enjoyable and interesting, and I hope you will enjoy it too.
- Try not to fall behind. I think you will have an easier time if you keep on top of your work
- Come to office hours! It will be great to meet you.

Tentative lecture schedule (very much subject to change!):

- Euclidean geometry (Textbook, Chapters 1 and 2): Weeks 1 and 2
- Coordinates and vector geometry (Textbook, Chapters 3 and 4): Weeks 3 and 4
- Projective geometry (Textbook, Chapters 5 and 6): Weeks 5, 6
- Transformations and non-Euclidean geometry (Textbook, Chapters 7 and 8): Weeks 7, 8, 9
- Loose ends, final exam review: Week 10

Lecture summaries:

I will periodically post very brief summaries of what was covered in lecture, with companion readings. See https://dancg.sites.ucsc.edu/teaching/math-232/math-232-lecture-summaries/ for an example of how this will look.

Key dates:

Midterm: November 6, in class
Final exam: 12/13, 12 - 3 PM