MATH470: Euclidean and Non-Euclidean Geometry
Course Information
Spring 2024

Instructor	Professor Jess Ellis Hagman Ways to address me: Dr. Hagman, Professor, Jess (preferred) Office: Weber 120 jess.ellis@colostate.edu
Class Time	Monday, Wednesday, and Friday 12-12:50pm
Class location	Engineering E204
Final Time	Wednesday May 12th 7:30am
Office Hours	Wednesdays at 3-4pm and Fridays 1-2pm in Weber 120 Please email me to schedule appointments outside of these hours. Email is also fine for questions that only require a short answer, but I am not attached to my email all day and so please be patient with a response. For questions that you want an immediate answer for, consider asking your classmates via email or the Canvas discussion board.
Course organization	I will be using Google Drive for much of the course organization. Here is a link to our class folder.

Course Objectives

This course will be guided by the following sentiment expressed by Francis Su: *Math class should be a place of thinking. It should be a place of exploration. It should be a place of play, a place of creativity and a place of enjoyment.*

A primary goal of this course is for students to explore Euclidean and Non-Euclidean Geometry and to build intuition about these topics. This course will rely heavily on your ability to develop conjectures, explore them, and argue for them. In this class, YOU will be doing the mathematics, instead of ME presenting someone else's mathematics to you.

A secondary goal of this course is to help you foster a critical and curious mindset. You have all learned geometry already, but in this class we will reexamine what we think we

know and explore new ideas within geometry. I hope that this mindset extends beyond our classroom to other mathematics courses, other CSU courses, and to your non-academic life.

We will be focusing on fostering the following mathematical virtues/practices to support these two goals: persistence, curiosity, imagination, disposition towards beauty, creativity, thinking for oneself, and making connections.

Note: These virtues/practices come from [Francis Su](#)'s suggestions for exam questions.

Text

Henderson & Taimina, *Experiencing Geometry* (4th Edition). We will cover Chapters 1-10, 14 &17, and additional chapters with time permitting.

Available for free online: https://projecteuclid.org/euclid.bia/1598805325

And [linked](#) in our [shared Google Drive](#).

Course format

Class meetings will involve working in small groups (2-4 people) on challenging problems, presenting your progress on these problems, however tentative, and providing others with questions and comments on their presentations. If you miss a class for whatever reason, I expect you to have engaged in the problem that we worked on it class, either individually or with others from class, so that when you return to class you can engage with the class where we are.

A t**entative schedule** is found [here](#), including text references and related homework.

[Homework](#)

Homework will be collected on a regular basis, and will often be highly connected to the work done in class. You should prepare your assignments in an organized and readable form. Messy or otherwise unorganized proofs may result in zero credit and returned without review. Late homework will be accepted for partial credit. There will be approximately 10 assignments. Your lowest homework score will be dropped. Discussion of problems and working *together* is highly encouraged. This does NOT include simply sharing or copying solutions, as plagiarism is a form of cheating. If this occurs, both the copier and the copied will be penalized.

Submit your HW (either a scanned document or computer made document into your personal Google drive for this class)

[Portfolios](#)

In this course, instead of having exams we will have a portfolio that you contribute to during the semester. The final portfolio will include your responses to each of the questions on the portfolio description. Each response should be around one page and is related to a mathematical virtue/practice that we are working to cultivate together.

Rather than midterm exams, there will be midterm portfolio submissions, where you submit responses to three of the listed questions for each midterm check in. I will give feedback on your submissions, and you can resubmit these responses as part of your final submission. You will also be asked to present about one-two of your responses during one of the two portfolio check ins throughout the term. Sign ups for these presentations are on the instruction sheet.

<u>Evaluation</u>

Portfolio - Midterm assessments	25%	Tentative dates are Friday Feb 15 & April 19
Engagement	10%	Ways to earn engagement points: Participate in class discussions, participate in group work. Respond to occasional feedback surveys. *Note: I am working to support spoken, written, and other forms of participation.*
Homework	25%	Lowest homework grade will be dropped
End of term project	20%	Presentations and posters will be presented during the final two weeks of class
Final Portfolio and presentations	20%	Wednesday, May 12th 7:30am-9:30am

To be assured the following grades, you need to earn:

A+ = 98% - 100%   B+ = 87% - 89%   C+ = 77% - 79%   D = 60% - 68%

A = 93% - 97%   B = 83% - 86%   C = 73% - 76%   F = 59% and below

A- = 90% - 92%   B- = 80% - 82%   C- = 68% - 72%

<u>Policy Regarding Academic Honesty and Respect</u>
I strive to use sound ethical practices in my own academic research and teaching, and I expect students in my courses to behave similarly. For students in MATH470, that means don't cheat or engage in other academically dishonest behaviors. Formally: MATH470 will adhere to the Academic Integrity Policy of the Colorado State University General Catalog and the Student Conduct Code.

For the homework, discussion of problems and working *together* is <u>highly encouraged</u>. This does NOT include simply sharing or copying solutions, as plagiarism is a form of cheating. If this occurs, both the copier and the copied will be penalized.

Any form of academic dishonesty will be given the most severe penalty possible. The minimum penalty I am required to enforce by Mathematics department policy is a zero for the assignment or exam. If you are at all in doubt about whether a behavior is academically dishonest, please ask me first. See the [CSU TILT webpage](#) for additional resources on this issue.

<u>Attendance</u>
In my own academic work, I strive to respect my students as well as my colleagues. I expect the same of you. Come to class prepared to learn and participate IN GROUPS and INDIVIDUALLY. If you are not capable of that for some reason, let me know.

<u>Documented Emergencies</u>
If you have a problem that will cause you to miss a due date, please discuss this with me in advance if at all possible. I can grant occasional exceptions when the reason relates to severe and unavoidable medical or personal emergency or to extraordinary professional opportunity. Some examples include hospitalization, funeral, court, and marriage of an immediate family member (sibling or parent). Documentation may be required. Exceptions are almost never warranted for personal vacations, family reunions, ordinary commitments of your work or job-seeking, or other voluntary events. Please schedule these at times that don't conflict with your classes.

<u>Support Services Available</u>
- Tutors: http://tutoring.colostate.edu/
- University Counseling Center: A variety of services are offered by the [CSU Psychological Services Center](#) (970-491-5212) including programs for reducing test anxiety and math anxiety, as well as programs for time management, test-taking skills, study strategies, memory and concentration enhancement. If you think that you may need help in one of these areas, please do not delay in investigating these services.

- Resources for Disabled Students: This center is located in Student Services Building 116. Students with mobility, visual, hearing, or learning disabilities are eligible for support, as well as students with chronic health conditions. Some of the services available include note takers, readers, and alternative testing. If you need specific accommodations due to a disability, please meet with me outside of class to discuss your needs as early in the semester as possible.