COURSE SYLLABUS Spring 2021

Modern College Geometry MTH 338, CRN 41989

Meets 4:40 – 6:30 pm Tuesday and Thursday in FMH 200

Instructor Information:

Instructor: Dr. Rebecca Tramel
E-mail (preferred contact): tramel@pdx.edu
Office: East Hall 122
Office Hours: Tuesdays and Thursdays 6:30-7:30pm

Land Acknowledgment:

Portland State University is located in the heart of downtown Portland, Oregon in Multnomah County. We honor the Indigenous people whose traditional and ancestral homelands we stand on, the Multnomah, Kathlamet, Clackamas, Tumwater, Watlala bands of the Chinook, the Tualatin Kalapuya and many other indigenous nations of the Columbia River. It is important to acknowledge the ancestors of this place and to recognize that we are here because of the sacrifices forced upon them. In remembering these communities, we honor their legacy, their lives, and their descendants.

Required Text and Technology:

We will use course notes and open-source materials, available on Canvas. https://canvas.pdx.edu/
All students are required to create a free geogebra.org account, preferably associated with your @pdx.edu gmail account, http://geogebra.org .

Course Objectives:

1. Develop your ability to do mathematics, read mathematics, communicate mathematical ideas with others, make conjectures, solve problems, justify and prove solutions.
2. Develop a sense of Euclid's axiomatic method and the historical development of non-Euclidean geometry.
3. Develop your understanding of Euclidean and non-Euclidean geometries (including triangle centers, circle geometry, analytic geometry, transformations, isometries)

Topics:

1. Euclidean Geometry (constructions, segments, angles, triangles, circles, area)
2. Transformations (congruence, similarity, analytical geometry)
3. Alternative Geometries (hyperbolic, and spherical geometry)

Keys for Success:

The official prerequisites for this course are MTH 261 (Elementary Linear Algebra) and MTH 252 (Calculus II). We will have varied experiences and knowledge about proving and about Euclidean geometry. **I care about the success of each student.** You may find that your classmates are able to make sense of some aspects of the course more quickly than you. That does not mean that you are not capable of success in the class. In this class we will embrace mistakes, value others' reasoning even when it is incorrect, and work as a community to enhance everyone's knowledge.

Grading:

Homework	30 %
Participation Forms	5 %
Quizzes	20 %
Midterm Exam	20 %
Final Exam	25 %

To determine your final grade, the ratio of earned points to total possible points within each category above will be calculated. Standard grades will be applied (e.g., 70 % of total points will result in a grade of at least a C-, which is the cutoff for a grade of P if you choose the P/NP option according to university policy).

Class Participation Forms: It can be useful to reflect on our progress each week in the course, and to check in with the instructor about any challenges or concerns. Each Monday you will submit a short form answering some questions about your work in the previous week. As part of this form, you will be able to tell me about anything you'd like me to know at that time.

Quizzes: There will be two quizzes for this course. The first will be posted on Friday, January 14 and due Friday, January 21. The second will be posted on Friday, February 18 and due on Friday, February 25. Each will be an opportunity to demonstrate the skills you are developing in problem solving and proof writing. You will each be asked to put together a short presentation explaining the proof of a geometry theorem, and post your presentation (either a video or slideshow) to Canvas.

Homework:
Each week I will assign several problems for you to write up and submit individually via Canvas. They will be due on Friday evenings.. These write-ups should either be typed or written neatly (please take high quality images). Submit your work as a single pdf document (you can insert images into a doc and save as pdf). I encourage you to discuss problems with other students outside of class, in which case you should describe how you collaborated with others in your individual write-up. **If something arises that you believe warrants an extension on an individual assignment, please contact me with as much advance notice as possible. I will be as flexible as I possibly can be with extensions on assignments. I may also provide opportunities for corrections or rewrites.**

Midterm Exam:
The Midterm Exam will take place in class on **Thursday, February 3rd**. The midterm will assess your skills and knowledge for applying the concepts from the problem sets and classwork from the first four weeks. It is open notes, but is an individual assignment.

Final Exam:
The final exam will assess your skills and knowledge for applying concepts from throughout the course. **The exam is scheduled for Tuesday, March 15, from 5:30 pm to 7:20 pm.** The format will be the same as the midterm. If you have accommodations for extended time from the DRC please contact me to discuss options for starting early or ending later.

Disabilities Services:
PSU values diversity and inclusion; we are committed to fostering mutual respect and full participation for all students. My goal is to create a learning environment that is equitable, useable, inclusive, and welcoming. If any aspects of instruction or course design result in barriers to your inclusion or learning, please notify me. The Disability Resource Center (DRC) provides reasonable accommodations for students who encounter barriers in the learning environment. If you have, or think you may have, a disability that may affect your work in this class and feel you need accommodations, contact the Disability Resource Center to schedule an appointment and initiate a conversation about reasonable accommodations. The DRC is located in 116 Smith Memorial Student Union, 503-725-4150, drc@pdx.edu, https://www.pdx.edu/drc.

- If you already have accommodations, please contact me to make sure that I have received a faculty notification letter and discuss your accommodations.
- Students who need accommodations for exams are expected to schedule their tests to overlap with the time the class is taking the exam.
- For information about emergency preparedness, please go to the Fire and Life Safety webpage (https://www.pdx.edu/environmental-health-safety/fire-and-life-safety) for information.

Reporting Obligation Disclosure:
As an instructor, one of my responsibilities is to help create a safe learning environment for my students and for the campus as a whole. As a member of the university community, I have the responsibility to report any instances of sexual harassment, sexual violence and/or other forms of prohibited discrimination. If you would rather share information about sexual harassment, sexual violence or discrimination to a confidential employee who does not have this reporting responsibility, you can find a list of those individuals. For more information about Title IX please complete the required student module Creating a Safe Campus in your D2L.

Schedule:

	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
Week 1 **Axiomatic Systems**	**3 Jan** Class Info Form Due	**4** Class 4:40 - 6:30pm FMH 200	**5**	**6** Class 4:40 - 6:30pm FMH 200	**7**
Week 2 **Congruence**	**10** Participation Form 1 Due	**11** Class 4:40 - 6:30pm FMH 200	**12**	**13** Class 4:40 - 6:30pm FMH 200	**14** HW 1 Due **Quiz 1 Posted**
Week 3 **Synthetic Geometry**	**17** Participation Form 2 Due	**18** Class 4:40 - 6:30pm FMH 200	**19**	**20** Class 4:40 - 6:30pm FMH 200	**21** HW 2 Due **Quiz 1 Due**
Week 4 **Area**	**24** Participation Form 3 Due	**25** Class 4:40 - 6:30pm FMH 200	**26**	**27** Class 4:40 - 6:30pm FMH 200	**28** HW 3 Due
Week 5 **Similarity**	**31** Participation Form 4 Due	**1 Feb** Class 4:40 - 6:30pm FMH 200	**2**	**3** **Midterm Exam 4:40 - 6:30pm FMH 200**	**4** HW 4 Due
Week 6 **Circles**	**7** Participation Form 5 Due	**8** Class 4:40 - 6:30pm FMH 200	**9**	**10** Class 4:40 - 6:30pm FMH 200	**11** HW 5 Due
Week 7 **Isometries, Symmetries**	**14** Participation Form 6 Due	**15** Class 4:40 - 6:30pm	**16**	**17** Class 4:40 - 6:30pm	**18** HW 6 Due **Quiz 2 Posted**

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Week 8 **Taxicab Geometry**	**21** Participation Form 7 Due	**22** Class 4:40 - 6:30pm FMH 200	**23**	**24** Class 4:40 - 6:30pm FMH 200	**25** HW 7 Due **Quiz 2 Due**
Week 9 **Spherical Geometry**	**28** Participation Form 8 Due	**1 Mar** Class 4:40 - 6:30pm FMH 200	**2**	**3** Class 4:40 - 6:30pm FMH 200	**4** HW 8 Due
Week 10 **Hyperbolic Geometry**	**7** Participation Form 9 Due	**8** Class 4:40 - 6:30pm FMH 200	**9**	**10** Class 4:40 - 6:30pm FMH 200	**11** HW 9 Due
Finals Week	**14**	**15** **Final Exam** **5:30 - 7:20pm** **FMH 200**	**16**	**17**	**18**