Name: Dr. Maggie **Pronouns:** She/Her/Hers **Email:** rahmoeller@roanoke.edu	**Office:** Trexler 270B **Student Hours (Drop In!):** Tues 10AM - NOON Wed 2:30-4:00PM	**Location:** Miller 113 **Days:** MWF **Time:** NOON-1PM

Student Hours Comments:

- The given times above will be consistently available unless emergencies arise.
- These are opportunities for you to ask me questions about material and/or class, including celebrations and concerns.
- Please come prepared to ask your questions – examples of more useful questions include, "I really don't understand how to apply Pasch's Postulate. Can you explain it again?" or "What is the definition of a triangle? Can you give another example?" Examples of questions that are less useful include, "I'm completely lost. I don't know where to begin. Can you help?" or "I haven't looked at the homework…can you help me?"
- It's always ok to pop by and say, "HI!" – I love getting to know you and chatting with you! But, these have to be short, fun visits ☺ Sadly, none of us have time to sit back and chill anymore. But – please pop by any time for a short 5-10 minute hello. And – never be afraid to come by if you need help ☺

Course Description: A review of Euclidean geometry and an introduction to non-Euclidean geometries, with a special focus on the theoretical framework of various geometric systems.

Intended Learning Outcomes: Students will be able to

- Construct valid proofs that proceed efficiently from hypothesis to conclusion

- Identify properties of triangles, parallel lines, and other objects in different geometries
- Identify the properties of isometries in different contexts
- Perform geometric constructions using software
- Present complete geometric arguments orally and in writing.

Your success in this class is important to me! We all learn differently and bring a variety of strengths and needs to the class. If there are aspects of the course that prevent you from learning or that make you feel excluded, please let me know as soon as possible. Together we'll develop strategies to meet both your needs and the requirements of the course.

Required Materials:
- *Exploring Geometry*; Michael Hvidsten, 2nd Edition + Online PDFs (provided through Inquire)
- GeoGebra, Spherical Easel software, as needed
- **Recommended:** Laptop computer – for software use

Commitment Hours: This course expects you to spend at least 12 hours of work a week inside and outside of class.

GRADE DISTRIBUTION:
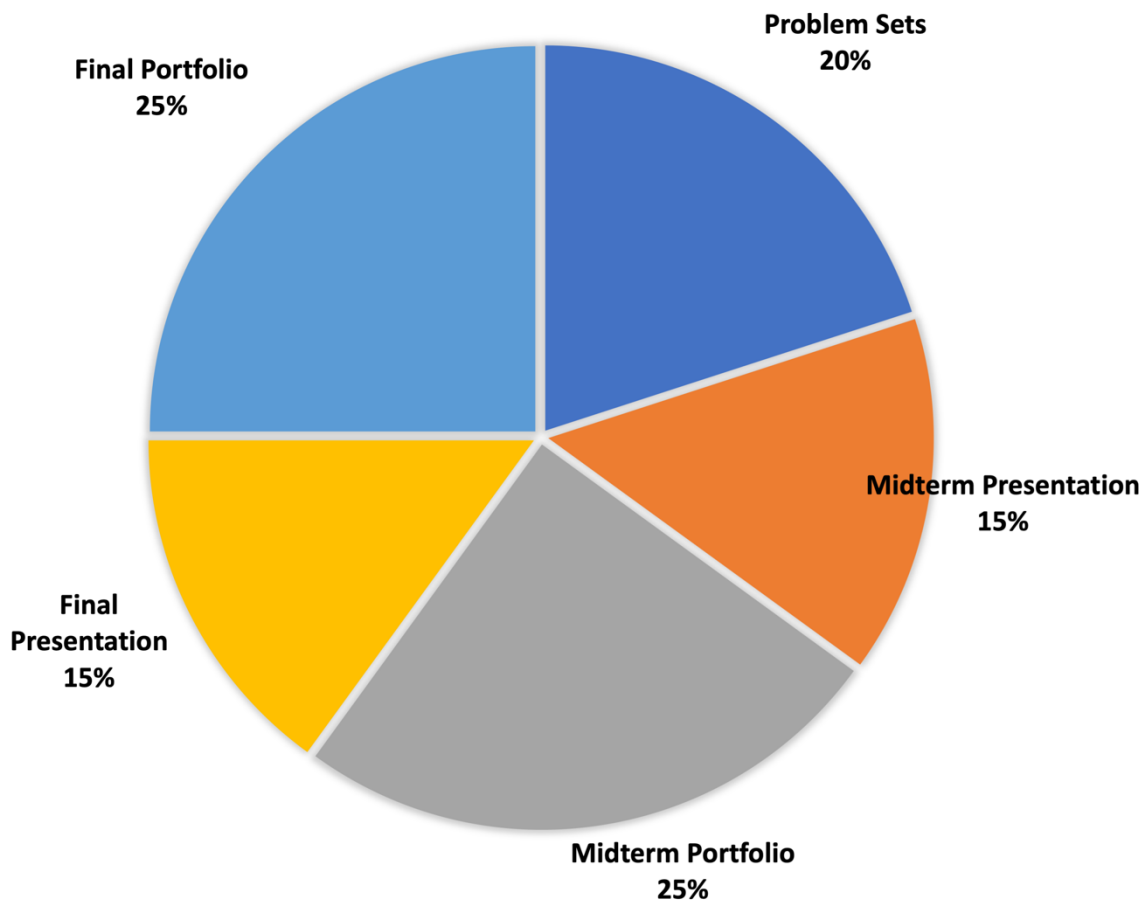
Grades will be determined based on the following:

A	94-100	B	83 – 87	C	73 – 77	D	63 – 67
A-	90 – 94	B-	80 – 83	C-	70 – 73	D-	60 – 63
B+	87 – 90	C+	77 – 80	D+	67 – 70	F	< 60

COURSE EXPECTATIONS

Classroom Environment: You are expected to treat all students in the class and me with courtesy and respect. Your comments to others should be factual, constructive, and free from

harassing statements. You are encouraged to disagree with other students, but such disagreements need to be based upon facts and documentation (rather than prejudices and personalities). My goal is to promote an atmosphere of mutual respect in the classroom. Please let me know if you have suggestions for improving the classroom environment. (Source: Iowa State University)

Diversity and Inclusivity

I consider this classroom to be a place where you will be treated with respect, and I welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability – and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class.

Attendance Policy: Our course's success depends on you attending class! If you miss class, you will miss community building, engaging conversations, and information that I deem worthy of your time! Plus, we will miss you!

However, life happens! You may get sick, have a game scheduled, or have something else come up. It will not be the end of the world if you miss a class *very occasionally*. At some point, though, missing class can be detrimental to success. So, do your best to be in class! Strive for perfect attendance!

What should you do if you have to miss class? Let me know ASAP! Communication is key! I don't need details (please, spare me the details!) but do let me know ahead of time, so we can make plans, if needed. If you cannot let me know ahead of time (emergencies do happen!), just let me know as soon as you can. Email is typically the best form of communication for me.

If you are sick (and contagious), please either stay home OR come to class wearing a mask. Please use Health Services to determine whether or not it is safe to attend class with a mask.

Sometimes it is better to stay home and get caught up later than to try to attend class – so be smart about it! And, if you are unsure, email me! I'll do my best to get back to you ASAP.

Late Work: Whether or not to accept late work is always a tough decision. Life happens – and occasionally we need more time to complete tasks! But, sometimes turning in an assignment late causes more complications than benefits.

- **Problem Sets** really need to be turned in on time. I need to be able to get prompt feedback to students and I work best if I have all work submitted at the same time. Should something come up, you need to email me ASAP to determine a plan to submit your work. Except for emergencies, I won't accept any Problem Set work more than on class period after the due date. I reserve the right to take off points for work turned in late.

- **Presentations** are set for certain days during the semester – these are hard to make up. But – in rare circumstances – I will work with you should you need to miss a presentation day.

- **Portfolios** are due Mon Oct 7 (midterm one) and Dec 13 at 2PM (final one) – I will not accept any late problems for your portfolios. Students will be presenting problems from their portfolios, and that presents a problem for you if your work is incomplete. If you need more time for any other component of your portfolio, you must email me BEFORE the deadline (and please, not the night it's due) to work through a potential solution. I reserve the right to take off points for work turned in past the deadline.

> ****In summary, the best thing you can do is *communicate* with me.** Let me know if you have concerns about turning in an assignment on time – I will do my best to work with you.**

Academic Integrity: Students are expected to adhere to the Academic Integrity policies of Roanoke College (https://www.roanoke.edu/inside/a-z_index/academic_integrity). All work submitted for a grade is to be your own work! No collaboration is allowed on quizzes or on your portfolios.

I encourage collaboration on problem sets! I want you to chat with each other, brainstorm with each other, help each other set up proofs, sketch visuals to help with the setup, and/or come up with an outline for how the proof might go. Feel free to jot down ideas and thoughts as you are working together. But when you go to write up your solutions completely, you should write them up individually. You should not be copying from another student's solution, nor asking someone what to do next while writing up your solution, nor discussing the problem with anyone else while writing up your solution. In other words, writing up your solutions should happen outside of any collaborative time. What I want? Y'all to help each other and throw ideas around! What I don't want? Someone sitting passively by, frantically writing down everything one person (or more) is saying...i.e. one person telling another how to do the problem.

You may not work with anyone on portfolio problems – even though these may be part of your Problem Sets, these are individual work only!

You may use GeoGebra and/or Spherical Easel for help with any problems - practice problems, problem sets, or portfolio problems. You may also look at solutions to problems we have done in class or problems that are worked through in the textbook for the course. But using unauthorized sources is a violation of Academic Integrity. This includes solutions posted online (not on Inquire), "homework help" sites, and artificial intelligence. Asking artificial intelligence to prove a problem for you to submit for a grade is an academic integrity violation. Uploading our course assignments to these sites is also a violation of Academic Integrity.

WHY? You spend a lot of money attending Roanoke College working toward a (or several) degree(s). Don't you want that degree to mean something? If RC students are only getting degrees by cheating, then does that degree actually mean anything? If we were to get a reputation for a "cheating" school…do you think you'd get a job after Roanoke College?

Besides, I like to be helpful. Ask me for help ☺ Especially when it's the night before something is due and you cannot figure out that one problem or you waited too long to start the assignment (which everyone does at least once) – **email me!!!!** Tell me you are sorry for procrastinating – that you will try not to do it again – that you are confused – that you need help and an extension! And then trust that I'll help you. If this becomes a habit? We have a problem and there will be consequences and strategies for changing. But…those consequences aren't as severe as failing the course entirely (most common AI violation penalty). So – email me!!!

COURSE ASSIGNMENTS

Reading & Participation: The key to learning a topic in mathematics is participation. We will strive to have an active, rather than passive, classroom environment. Being an active participant doesn't mean just attending class, it also means asking questions, offering suggestions when working through a problem in class, and attempting to answer questions I pose - in other words, being engaged with the material. And the key to reading math textbooks is *interactive reading* – try the examples, work through steps they skipped, and try problems.

Problem Sets: We will have 8 Problem Sets throughout this course - see the schedule on Inquire. These will be assigned the previous week and are each worth a total of 25 points. The problems will be worth 20 points total, carefully graded for correctness and completion of the solutions. The remaining 5 points is for *presentation* of the problems.

What is meant by *Presentation*? Your homework must be neat and organized, with the problems listed in order, and will be submitted in class. You may type your solutions, but this is not required. Preview any work before you submit it. It is your responsibility to make sure your work is readable.

Midterm & Final Portfolio: In place of tests and a final exam, you will prepare and turn in a Portfolio. The portfolio will contain your solutions to chosen problems, papers and other tangible products about assigned topics, and work done for in-class activities. You will be given a list of topics that must be included in the portfolio and guidance for choosing problems that fit those topics. The Midterm Portfolio is due Monday, October 7 by Midnight and the Final Portfolio is due Friday, December 13 by 2PM.

There will be opportunities throughout the semester for you to ask questions and maintain progress toward completing the portfolio. The problems you choose cannot be from those whose solutions appear in the book or that have been previously graded. See the information sheet posted on Inquire for additional details.

Presentations: One of the goals for this course is to improve your ability to present mathematics orally. You will formally present solutions to problems twice in this class. First, you will choose a problem from your midterm portfolio and present it the week of October 7. Second, you will choose a problem from your final portfolio and present it on December 13 (final exam time slot). Midterm presentations are 5-6 minutes, final presentations will be 8-10 minutes.

MCSP Conversation Series: The MCSP department and Roanoke College offer many opportunities to engage with mathematical ideas outside of classes. These co-curricular sessions engage the community to think about ongoing research, novel applications and other issues that face our discipline. Members of this class are encouraged to attend many of these activities, **however attending at least two is mandatory**.

Within one week of attendance, you must submit a brief response to the activity. This should not simply be a regurgitation of the content, but rather a personal contemplation of the experience. See Inquire for reflection prompt. These will be part of your Problem Set grade.

Additional participation (and submission of a reflection paper) will earn you extra credit, with .5% added to your course average for each attended, up to 2% total. In addition, individually, you may request that other appropriate events count.

RESOURCES

Accessible Education Services (AES) is located in the Goode-Pasfield Center for Learning and Teaching in **Fintel Library**. AES provides reasonable accommodations to students with documented disabilities. To register for services, students must self-identify to AES, complete the registration process, and provide current documentation of a disability along with recommendations from the qualified specialist. Please contact Dustin Persinger, Assistant Director of Academic Services for Accessible Education, at 540-375-2247 or by e-mail at aes@roanoke.edu to schedule an appointment. If you have registered with AES in the past and would like to receive academic accommodations for this semester, please contact Dustin Persinger at your earliest convenience to schedule an appointment and/or obtain your accommodation letter for the current semester.

IF YOU HAVE ACCOMODATIONS THAT YOU WOULD LIKE TO USE THIS SEMESTER, YOU MUST SCHEDULE A MEETING WITH ME _BEFORE_ YOU REQUEST THEM FOR OUR CLASS.

The Writing Center @ Roanoke College, located on the Lower Level of Fintel Library (Room 15), offers free tutorials focused on writing projects and oral presentations for students working in any field. Writers and presenters at all levels of competence may visit the Writing Center at any

point in their process—including brainstorming, drafting, organizing, editing, or polishing presentation skills—to talk with trained peer tutors in informal, one-on-one sessions. The Writing Center is open Sunday through Thursday from 4 to 9PM. Simply stop in or schedule an appointment at www.roanoke.edu/writingcenter. Questions? Email writingcenter@roanoke.edu or call 540-375-4949.

Student Health & Counseling Services supports students through in-person health appointments, in-person counseling, 24/7 telehealth (TimelyCare), Therapy Assistance Online, as well as resources related to general wellness, LGBTQ+, sexual assault, substance abuse, and suicide prevention. Unmet health needs can negatively impact your performance in this course. Student Health & Counseling Services can help. Please see https://www.roanoke.edu/shcs for more information and to access services.

TENTATIVE COURSE SCHEDULE

**Note – Chapters 11 & 12 are Online

Week	Date	Sections	Topic	Items Due
Week 1	Aug 28	1.1-1.2	Intro & Proof Validation	
	Aug 30	1.4	Axioms – Creating Models	
Universal Geometry				
Week 2	Sep 2	1.5	Axiom - Independence & Proving	
	Sep 4	1.6 / 11.1	Recap + Euclid & Hilbert	
	Sep 6	11.1	Incidence Axioms	Problem Set 1
Week 3	Sep 9	11.2	Betweenness	
	Sep 11	11.3	Angle/Ray Betweenness	
	Sep 13		**No Class!**	
Week 4	Sep 16	11.4	Triangles	Problem Set 2
	Sep 18	11.5	Triangles / Congruence	
	Sep 20	11.5/6	Cong. / Segment & Angle Order	
Week 5	Sep 23	11.7	**Construction Day**	
	Sep 25	11.7	**Construction Day**	Problem Set 3
Neutral Geometry				
	Sep 27	12.1	Parallelism	
Week 6	Sep 30	12.1	Parallelism	
	Oct 2		Quads & Parallelism	
	Oct 4		Quads	Problem Set 4
Week 7	Oct 7		**Distance Activity**	**Midterm Portfolio Due Midnight**
	Oct 9		**Midterm Presentations – Day 1**	
	Oct 11		**Midterm Presentations – Day 2**	

			FALL BREAK!!!	
			Euclidean Geometry	
Week 8	Oct 21	2.1/2 + 13.3	Parallelism & Quads	
	Oct 23	2.1 / 2.2	Triangles	
	Oct 25	2.4/5, 13.2	Similar Triangles	
Week 9	Oct 28	2.6	Circle Geometry	
	Oct 30		**Euclidean Geometry Activity**	Problem Set 5
	Nov 1		**No Class!**	
			Hyperbolic Geometry	
Week 10	Nov 4	7.1-7.2	Explore Poincare Model ****Bring Computer!**	
	Nov 6	7.3	Parallel Lines	
	Nov 8	7.3	Omega Points & Triangles	
Week 11	Nov 11	7.5.2	Triangles!	
	Nov 13		**Hyperbolic Geometry Activity **Bring Computer!**	Problem Set 6
			Elliptic Geometry	
	Nov 15		**Elliptic Geometry Activity **Bring Computer!**	
Week 12	Nov 18	8.4	Basic Results	
	Nov 20	8.5	Triangles	
			Transformational Geometry	
	Nov 22		**Transf. Geometry Activity **Bring Computer!**	Problem Set 7
Week 13	Nov 25	5.1	Isometries	
			THANKSGIVING BREAK!!!!!	

Week 14	Dec 2	5.2	Line Reflections	
	Dec 4	5.3 & 5.4	Translations & Rotations	
	Dec 6	5.6	Glide Reflections & Results	Problem Set 8

Final Exam Slot
Friday, Dec 13   **Final Portfolio Presentations!**
2 – 5PM   **Portfolio due by 2PM**
                                   Reflection due by 2PM