THE UNIVERSITY OF ALABAMA AT BIRMINGHAM

Department of Mathematics

MA 572-2B **Syllabus for Geometry I (Euclidean)** **Fall 2026**

Instructor: Dr. John Mayer

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Preferred Methods of Contact: Email is the preferred method of contact. Please expect a response within 24 hours on weekdays and a slower response on weekends. I will expect the same of you. Include "MA 572-2B" or "Geometry" in the subject line of your email for a faster response. I am available to meet with you virtually via Zoom by appointment or during office hours (TBA).

Instructional Method:

In-Person: This class will be conducted with in-person class meetings and the Canvas Learning Management System. Check the course Canvas page often for announcements and assignments.

Time Commitment: This class meets twice per week for 1.25 hours each meeting. In addition to our class meeting time, you should spend about 6 hours per week reading, studying, preparing for class discussions, and completing assignments.

Course Information:

Course Number and Title: MA 572-2B – Geometry I (Euclidean)

Class Meeting Times: Tuesday/Thursday 9:30 – 10:45 AM

Class Meeting Location: TBA

Course Description:

This course is a "guided inquiry" course. That is, your textbook will consist of statements of definitions, axioms, problems, and theorems, and occasional brief explanations. There will be very little lecture in class. You will be expected to solve the problems and prove the theorems yourself, individually and in small groups. Small group assignments are at the instructor's discretion and may be random. Individual and group work will be "processed" by the class as a whole. Processing involves whole class discussion of the problem or theorem, usually based upon one or more student presentations to the class. Competence in oral and written communication of mathematics is a major goal of the course.

In a guided inquiry course, whether you are working individually or in a group, you are expected NOT to consult outside sources such as other geometry textbooks, internet websites, smarter friends, AIs, friendly extra-planetary aliens, or the like. You may work with other students in the class, but if you present work done in part by others, you must give credit to all who participated in the work. (For example, you might say "Ann and I worked together on this.") This will not diminish your credit but is required by academic honesty. Moreover, your collaborators are not required to bail you out of difficulty but may elect to do so.

Course Objectives (subject matter, content): We will cover the following topics this semester:

1. Congruence and geometric constructions.
2. Introduction to axioms, theorems, and proofs in Euclidean geometry.
3. Area measure: definitions, axioms, and theorems.
4. Angle measure: definitions, axioms, and theorems.
5. The Pythagorean Theorem, its proof and applications.
6. Similarity, trigonometry, and circle measure.

Learning Outcomes (student skills and knowledge acquired): At the end of the course, students will:

1. Articulate understanding of congruence, transformations, and isometries.
2. Undertake geometric constructions using ruler and compass.
3. Articulate understanding of basic axioms, theorems, and proofs about congruence of triangles and other plane figures.
4. Articulate understanding of parallel lines and the measure of area.
5. Articulate understanding of the Pythagorean theorem and the measure of angles.
6. Articulate awareness of similarity, trigonometry, and circle measure.

Prerequisite: MA 125 – Calculus I or equivalent. *May be waived subject to discussion with instructor.*

Required Text and Course Materials:

There is a required textbook for this course: David Clark, *Euclidean Geometry, A Guided Inquiry Approach*.* During every class you should have available the following items.

1. Your textbook.
2. A 3-ring binder containing your class Notebook, everything up to date.
3. Straightedge (ruler) and compass.
4. Sharp pencils or pens, colors are useful.

You will need a few sheets of tracing paper or clear plastic that you can draw on. You will need a scanning app on your smart phone or computer to submit PDF copies of work done for assignments and presentations. To download the free Adobe Scan app, open the app store on your mobile device, search for **Adobe Scan**, and tap "Install" or "Get."

Course Grades: Students earn their grade in the course as determined in the tables below. How each grade component is determined is described in the paragraphs that follow. Points accumulated will be recorded in CANVAS within one week of the completion of the assignment or activity. Important due dates will be listed in CANVAS calendar. Recall that there is no grade of **D** for graduate students. Moreover, a **C** possibly may not count toward your graduate degree.

Grade Element	**Points**		**Points Earned**	**Course Grade**
In-Class Quizzes	100		450 points or more	A
Canvas e-Quizzes	75		350-449 points	B
Participation	75		300-349 points	C
Assignments	100		Below 300 points	F
Final Exam	100			
Final Paper	50			
Total	**500**			

***David Clark's *Euclidean Geometry: A Guided Inquiry Approach* bridges the gap between ancient Euclidean geometry and Hilbert's modern foundations. It is structured so that you discover the proofs independently, which is highly recommended for future secondary school teachers. The text should be available at UAB Bookstore or various online sites.

Participation: You are expected to participate actively, particularly in small group work and class processing discussions. Mere presence does not constitute ACTIVE participation. Participation points are awarded according to the following table. Note that it is possible to earn MORE than 75 points total for the semester since we will have almost 30 class meetings. Points earned beyond 75 are extra credit. Priority in presenting goes to students with the fewest Participation points.

Level of Participation	**Points**
Be present in class	1
Make minimal presentation or contribute meaningfully to class/group discussion	2
Contribute significantly to class discussion	3
Make good presentation (substantially correct)	4
Make excellent presentation (completely correct)	5

Assignments: After certain problems and theorems are presented in class, you will be required to turn in your written solution/proof of designated problems/theorems as an Assignment in Canvas. This is intended to verify your understanding of the solution or proof after it has been presented to the class as a whole. You must draw your own figures and write out the solutions/proofs in your own words, though you may follow the solution as presented in class. Assignments count 10 points each, unless otherwise stated.

Late Assignment Policy: Assignments no more than one class meeting late will be subject to a 10% grade penalty. Assignments more than one class meeting late will be subject to greater penalty at the discretion of the instructor.

Tests and Quizzes:

There are three categories of tests and quizzes. All quizzes and tests are open book: you can use the textbook or your Notebook, but you may not consult any other sources, **AI** or otherwise.

1. **Canvas e-quizzes**: Canvas e-quizzes must be completed prior to each class meeting. Typically, an e-quiz will be three to five short-answer or multiple-choice questions. The purpose of this quiz is so that you will have done some work on new material prior to class. Each e-quiz counts 3-5 points. It is possible to earn more than 75 points; points beyond 75 are extra credit.
2. **In-Class Quizzes**: Quizzes will be given in class without prior announcement and based primarily upon work done within the current and one or two prior class meetings. Quizzes will be of a similar nature to the types of problems, examples, constructions, and theorems encountered in class and in working through the textbook. Each quiz counts 10 points unless specified otherwise at the time. No quizzes take a full class period, usually just 20 minutes or so.
3. **Final Exam**: The final examination will consist of several problems like the major problems and theorems of the course but not repeating problems in the course. You will be able to select a small number of problems to work on from a longer list.

Final Paper:

MA 572 is scheduled with MA 472 and MA 572 students participate together in all class activities described above without distinction being made between students. However, MA 572 students have additional requirements:

1. 5-10 page mathematical expository paper on some aspect of advanced (beyond undergraduate course topics) Euclidean or non-Euclidean geometry. Discuss your topic selection with the instructor well in advance. This is the one case where you can consult other sources. The paper counts an additional 50 points toward your final grade.

2. On the final exam, graduate students will have to select a problem from a designated graduate section on trigonometry, similarity, and circle measure in addition to the other problems made available for selection.

Make-Up Policy: There are no make-up quizzes or presentations for absences resulting in decreased participation or quiz credit. If you miss a class for a verifiable emergency**,** illness, necessary medical appointment, COVID or other respiratory isolation, or on UAB official business, the instructor will work with you to find a reasonable accommodation.

Notebook Requirement:

Both work done in class, in small groups, and individually, and any notes you take based upon whole group discussion or lecture, will be kept in your permanent class Notebook (loose-leaf 3-ring binder). Your Notebook should contain the following sections:

1. Finished work: work you have completed, and which has been presented (by you or someone else) in class.
2. Work in Progress: work you have attempted and/or are prepared to present.
3. Graded Assignments.
4. Graded Quizzes.
5. Class Discussion and Lecture Notes.

Keeping your Notebook up to date is part of your engagement in your own learning. Attention to keeping an up-to-date Notebook will greatly improve your work over the semester.

Scoring Rubic (10 Point Scale). This rubric is applied to assignments and to test and quiz questions.

	Conceptual Understanding: *Interpreting the concepts of the task and translating them into mathematics (Identifying the "core" of the problem)*	**Evidence Of Problem Solving:** *The use of task-appropriate tools and problem-solving strategies.*	**Explanation:** *Using verbal reasoning and appropriate constructions to best convey the solution. (The explanation flows smoothly.)*	**Accuracy:** *Providing a wholly justified solution for the task at hand.*
3			Explanation is coherent, and the ideas involved follow logically from previously stated ones.	The solution is completely justified, with no gaps in the argument.
2	Student's work has demonstrated that he/she has fully identified the major concepts of the task.	The student's work has demonstrated the strategic use of all task-appropriate tools and problem-solving methods.	Explanation is not sufficiently rigorous, or something may not immediately follow from what is written.	The solution has one or two minor gaps in justification.
1	Some, but not all, of the major concepts needed were evident.	Not all tools needed for the task are used or the tools are not used in a manner appropriate for solving the problem.	Explanation has multiple gaps or multiple steps need to be inferred.	The solution has major gaps in the justification.
0	Does not achieve minimal requirements for 1 point	Does not achieve minimal requirements for 1 point	Does not achieve minimal requirements for 1 point	Does not achieve minimal requirements for 1 point

Rules for Group Work

1. Each member takes responsibility for his/her own learning.
2. Each member of the group is willing to help every other group member who asks for help.
3. Groups may ask the teacher for help only when all group members have the same question.
4. There is always a further challenge.

These rules for group work apply during all small group discussions. Whole group discussions require adherence to the standard rule of classroom engagement: speak and listen respectfully.

UAB Policies and Resources

Add/Drop and Course Withdrawal:

- Drop/Add: Deadlines for adding, dropping, or withdrawing from a course and for paying tuition are published in the https://www.uab.edu/students/academics/academic-calendar/2026-2027 available online. Review the Institutional Refund Policy for information on refunds for dropped courses.
- Withdrawal: To avoid academic penalty, a student must withdraw from a course by the withdrawal deadline shown in the academic calendar and receive a grade of W (withdrawn). Failure to attend class does not constitute a formal drop or withdrawal.

UAB Student Health

- UAB guidelines for respiratory symptoms recommend individuals with a fever, cough, or shortness of breath to wear a mask. Anyone experiencing these symptoms should avoid crowds, stay home until fever-free for 24 hours without medication, and consult their healthcare advisor for testing.
- We strongly urge you to be fully vaccinated: https://www.uab.edu/students/health/immunizations.

Misconduct: The University of Alabama at Birmingham expects all members of its academic community to function according to the highest ethical and professional standards. Students, faculty, and the administration of the institution must be involved to ensure this quality of academic conduct. Review the Academic Honor Code and Non-Academic Student Code of Conduct linked below.

- Academic Integrity Code
- Non-Academic Student Code of Conduct

DSS Accessibility Statement: UAB is committed to providing an accessible learning experience for all students. If you are a student with a disability that qualifies under the Americans with Disabilities Act (ADA) and/or Section 504 of the Rehabilitation Act, and you require accommodations, please contact Disability Support Services for information on accommodations, registration and procedures. Requests for reasonable accommodations involve an interactive process and consist of a collaborative effort among the student, DSS, faculty and staff. If you are registered with Disability Support Services, please contact me to discuss accommodations that may be necessary in this course. If you have a disability but have not contacted Disability Support Services, please call 934-4205 or visit http://www.uab.edu/dss.

Title IX Statement: The University of Alabama at Birmingham is committed to providing an environment that is free from sexual misconduct, which includes gender-based assault, harassment, exploitation, dating and domestic violence, stalking, as well as discrimination based on sex, sexual orientation, gender identity, and gender expression. If you have experienced any of the aforementioned conduct, we encourage you to report the incident. UAB provides several avenues for reporting. For more information about Title IX, policy, reporting, protections, resources and supports, please visit UAB Title IX webpage for UAB's Title IX, UAB's Equal Opportunity, Anti-Harassment, Duty to Report, and Non-Retaliation policies.