

COURSE SYLLABUS

CLASS HOURS: MF: 1:00-1:50pm, TuTh: 1:10-2:00pm, Wickersham 201 (CRN 14092)
INSTRUCTOR: Dr. Zhigang Han
OFFICE: Wickersham 216
OFFICE HOURS: M: 12-12:30pm, Tu: 11am-12:30pm, Th: 10am-12:30pm, F: 12-12:30pm
OFFICE PHONE: (717) 871-7310
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Textbook: Umble and Han, *Transformational Plane Geometry*, ISBN 9781482234718

Tools: MIRA, compass, ruler, and protractor.

Grading: You can see your grades on D2L (**Assessment / Grades**). Coursework will be weighted as follows:

Problem Sets	MIRA Assignments	Paper	Three tests	Final Exam
10%	10%	10%	15% each	25%

The letter grade will be assigned as follows:

A: 93% - 100%	A-: 90% - 93%	B+: 87% - 90%	B: 83% - 87%	B-: 80% - 83%
C+: 77% - 80%	C: 73% - 77%	C-: 70% - 73%		F: 0% - 70%

Tentative Schedule: The following schedule may need to be adjusted in the event of unforeseen circumstances.

	Topics	Due dates		Topics	Due dates
08/22	1.1 Existence and incidence		10/17	5.5 Glide reflections	
08/23	1.1		10/18	5.5	
08/25	1.2 Distance and ruler		10/20	Classical vs Transformational	Mira 2 due
08/26	1.2		10/21	Classical vs Transformational	PS 6 due
08/29	1.3 Plane separation		10/24	Review session 2	
08/30	1.4 Protractor		10/25	—	Test 2
09/01	1.4		10/27	6.1 Fundamental theorem	
09/02	1.5 SAS/Euclidean parallel	PS 1 Due	10/28	6.2 Classification of isometries	Withdraw deadline
09/05	—	Holiday	10/31	6.3 Isometry recognition	
09/06	2.1 Exterior angle theorem		11/01	6.4 Geometry of conjugation	
09/08	2.2 Triangle congruence theorem		11/03	8.1 Plane similarities	
09/09	2.2		11/04	8.1	PS 7 Due
09/12	2.3 AIAT/Angle sum theorem		11/07	8.2 Classification of dilatations	
09/13	2.3	PS 2 due	11/08	8.2	
09/15	2.4 Similar triangles		11/10	8.3 Classification of similarities	
09/16	2.4		11/11	8.3	
09/19	Pythagorean theorem	Mira 1 due	11/14	Classical vs Transformational	Mira 3 due
09/20	Pythagorean theorem	PS 3 due	11/15	Classical vs Transformational	PS 8 Due
09/22	Review session 1		11/17	Review session 3	
09/23	—	Test 1	11/18	—	Test 3
09/26	Ch 3 Transformations		11/21	Circles	
09/27	4.1 Translations		11/22	Circles	
09/29	4.2 Rotations		11/24	—	Thanksgiving
09/30	4.2		11/25	—	Thanksgiving
10/03	4.3 Reflections		11/28	Circles	
10/04	4.3	PS 4 due	11/29	Circles	
10/06	5.2 Rotation = two reflections		12/01	Circles	Mira 4 due
10/07	5.3 Reflection = two reflections		12/02	Final review session	PS 9 due
10/10	—	Fall Break	12/05	Final review session	
10/11	—	Fall Break	12/07	Wednesday	Final: 10:15-12:15
10/13	5.4 Angle addition theorem				
10/14	5.4	PS 5 Due			

Course Description: Math 505 is a 4-credit course in geometry from both classical and transformational points of view. The classical part of the course will focus on the axiomatic development of geometry. The transformational part of the course will begin with the study of two families of transformations: isometries and similarities, followed by the investigation of various geometric theorems in terms of these two families of transformations. Emphasis on proving geometric theorems using both classical and transformational approaches.

Course Objectives: Upon successful completion of this course, the student will be able to:

1. Demonstrate an understanding of axiomatic treatment of geometry.
2. Classify an isometry as a reflection, rotation, translation, or glide reflection; factor an isometry as a composition of three or fewer reflections;
3. Classify a similarity as an isometry, stretch, stretch rotation, or stretch reflection.
4. Use the MIRA to perform various geometric constructions;
5. Write proofs in the context of both classical and transformational geometries.

Attendance: Attendance is required if you are healthy. Frequent unexcused absence will affect your grade negatively.

D2L: All course documents will be posted on D2L (**Resource / Content**).

Problem Sets and MIRA Assignments: There will be nine problem sets. Your lowest problem set score will be dropped. There will be four MIRA assignments.

You are encouraged to work with other students. **However, you must write your own solutions, and you must name all your collaborators. Failure to do so may result in disciplinary action.**

Paper: Each student will discuss with the instructor to select a topic of their interest. The paper will be due towards the end of the semester.

Exams: There will be three in-class tests and one (cumulative) final exam.

Technology: You are encouraged to explore geometry using computer software such as Geometer's Sketchpad or GeoGebra. While software can enrich the experience of learning geometry, it is not required for this course.

Academic Honesty: