

# MATH 6233: Geometry

## Spring Semester 2019

**Instructor:** Dr. Abdollah Khodkar  
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**Online Office Hours:** Monday and Wednesday 3:00pm-4:30pm.

If you would like to talk to me but cannot make it during these times, please make an appointment. I will be on campus on Monday, Wednesday and Friday and will be available between 11:00am and 12:00noon.

If you want to see me on campus, just send me an email.

**Prerequisites:** College Geometry (MATH 4233)

**Hours Credit:** 3 hours

**Class Type:** This class is 95% or more online

**Textbook:** Geometry by David A. Brannan, Matthew F. Esplen, and Jeremy J. Gray

**Courses Description:** Study of various geometries including Affine, Projective, Inversive, non-Euclidean, and Spherical, and how they are related.

**Discussions:** Questions that are of importance to everyone in the class may be posted to the appropriate discussion topic. Posting to the discussion boards allows all students in the class to see the answer.

**Learning Outcomes:** The student will have an understanding of:

1. The coordinate and vector approach to Geometry
2. Properties of Affine Transformations and the Fundamental Theorem of Affine Geometry
3. The Projective Plane  $RP^2$ , Projective Transformation and Cross Ratio
4. Desargue's Theorem, Pappus' Theorem and Brianchon's Theorem
5. Affine and Projective Planes, and their relationship with each other
6. Inversion, Extended plane, Inversive Geometry and Coaxal families of Circles

## Topics include:

<u>Sections</u>	<u>Title</u>
2.1	Geometry and Transformation
2.2	Affine Transformations and Parallel Projections
2.3	Properties of Affine Transformations
2.4	Using the Fundamental Theorem of Affine Geometry
2.5	Affine Transformations and Conics
3.1	Perspective
3.2	The Projective Plane $RP^2$
3.3	Projective Transformations
3.4	Using the Fundamental Theorem
3.5	Cross-Ratio
5.1	Inversion
5.2	Extending the Plane
5.3	Inversive Geometry
5.4	Fundamental Theorem of Inversive Geometry
5.5	Coaxal Families of Circles

**Rescheduling tests/Final:** If you have a *university-approved excuse* for missing a test or final, you may be allowed to reschedule, but you must make an arrangement with me in advance.

**Quizzes:** There will be an online quiz each week (15 quizzes all together). Each quiz will be worth 2% toward your final grade.

**Students should turn in their solutions as an attachment in .pdf format to an email. Students will have access to their weekly quizzes from the beginning of the semester and their quizzes should be turned in by the deadline.**

**Tests:** There will be three online tests. Each will be worth 15%.

Test 1: Monday and Tuesday February 4 and 5, 2019.

Test 2: Monday and Tuesday March 4 and 5, 2019.

Test 3: Monday and Tuesday April 1 and 2, 2019.

**Students should email me their solutions as an attachment in .pdf format to an email.**

**Final exam:** The proctored final exam will be on Friday April 26, 2019 at UWG. The final exam will be worth 25%.

**The dates for tests and final exam are subject to change.**

**Grading Scale:**

- A= 90-100%
- B= 80-89%
- C= 70-79%
- D= 60-69%
- F= 0-59%

**Grading:** Your final grade will be determined as follows:

Quizzes: 30%; Tests 45%; Final exam 25%.

Please carefully review the following information at this link

<https://www.westga.edu/administration/vpaa/common-language-course-syllabi.php>

It contains important material pertaining to your rights and responsibilities in this class. Because these statements are updated as federal, state, university, and accreditation standards change, you should review the information each semester.