

MATH 3301: Foundations of Geometry
Spring 2019

Instructor: Dr. Glenda Mitchell

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Preferred Office Hours:

MWF 11:00-1:00pm, TTh 2:00 – 3:00pm, or by appointment

Section Information: MATH 3301-001

Time and Place of Class Meetings: Monday & Wednesday, 2:30- 3:50pm, PKH 109

Description of Course Content:

This course will develop a foundation for geometry, including Euclidean and Non-Euclidean geometries. Course activities will emphasize problem solving in geometry as well as reading, writing, and communicating mathematical arguments in the context of geometry.

Student Learning Outcomes:

- (1) Describe and apply foundational concepts from geometries such as Euclidean geometry, Non-Euclidean geometry, and Transformational geometry.
- (2) Describe connections among geometric concepts.
- (3) Use technology to explore geometric concepts
- (4) Explain geometric concepts using clear mathematical arguments and proofs.
- (5) Apply problem-solving skills to problem situations in geometry.
- (6) Clearly communicate geometric concepts through writing and speaking.

Required Textbook (all are OER – open educational resources [free]):

Art of Mathematics:Geometry by Julian F. Fleron and Volker Ecke (<http://www.artofmathematics.org>)
Dimensions by Jos Leys, Etienne Ghys, and Aurelien Alvarez (http://www.dimensions-math.org/Dim_E.htm)

Additional materials will be provided in class and through UTA Blackboard (elearn.uta.edu).

Blackboard will also be used for course communication and assignments (elearn.uta.edu). For assistance with Blackboard, please contact the UTA Helpdesk at the Office of Information Technology.

Course Schedule (Tentative):

Topics	Date	Events to note
Fold and Cut Theorem	M Jan 14	
Navigating Between Dimensions	W Jan 16	
	M Jan 21	NO CLASS MLK Day
	W Jan 23	
	M Jan 28	Homework 1
	W Jan 30	Quiz 1
Visualizing Between Dimensions	M Feb 4	
	W Feb 6	
	M Feb 11	Homework 2
	W Feb 13	Quiz 2
Higher Dimensions	M Feb 18	
	W Feb 20	
	M Feb 25	Homework 3
	W Feb 27	
In between the Dimensions - Fractals:	M March 4	
	W March 6	Midterm Exam
	M March 18	
	W March 20	
	M March 25	Homework 4
Elliptic and Hyperbolic Geometry	W March 27	Quiz 3
	M April 1	
	W April 3	Quiz 4
	M April 8	
	W April 10	
	M April 15	Quiz 5
	W April 17	
	M April 22	
	W April 24	Homework 5
	M April 29	Project Papers & Project Presentations
	W May 1	Project Presentations
Wednesday, December 8 2:00pm – 4:30pm		Final Exam

As the instructor for this course, I reserve the right to adjust this schedule in any way that serves the educational needs of the students enrolled in this course. – Glenda Mitchell

Grading:

Homework sets	150 points
Quizzes	150 points
Participation	60 points
Group Project	140 points
Mid-term Exam	200 points
<u>Final Exam</u>	<u>300 points</u>
Total	1000 points

A	≥ 900 points
B	800 – 899 points
C	700 – 799 points
D	600 – 699 points
F	< 600 points

Students are expected to keep track of their performance throughout the semester and seek guidance from available sources (including the instructor) if their performance drops below satisfactory levels; see “Student Support Services,” below.

Course Assignments, Examinations, and Expectations:**Homework:**

Five homework sets will be assigned. Only selected problems will be graded, and these will be announced when homework is assigned. Some problems will be explored in class and others will be completed entirely outside of class. You may work in groups on homework problems; however, the final copy of your homework must reflect your own thinking and be written without assistance. The act of copying a solution from another student, textbook, the internet, or as dictated by a tutor (etc.) constitutes academic misconduct. (See *Academic Integrity* section.) Late homework is not accepted. The top 4 scores out of your 5 homework assignments will count towards your course grade.

Quizzes:

Five quizzes will be given in the course. Generally, the quizzes will be given in the first 15 minutes of class. Material on the quiz will be announced in advance. There will be no make-ups for missed quizzes for any reason. The 4 top scores out of your 5 quizzes will count towards your course grade.

Exams:

One mid-term exam and one final exam will be given in the course. Material on the exams will be announced in advance. The final exam will be comprehensive. No makeup examinations will be allowed except for documented emergencies. (See the UTA Student Handbook.) In the case of documented emergency, a request for a make-up exam **MUST** be submitted to the instructor in writing, with the supported documents. It is imperative that you contact your instructor as soon as possible (do **NOT** wait until you return to class!), and include a way that you can be reached.

Project:

You will complete a course project in groups of 1-4 students. All requirements for the project are the same, regardless of the number of people in the group. The project topic should extend the geometry concepts covered in the course and must contain a typed report (5 pages minimum) and a 15-minute oral presentation to the class. Suggested topics will be provided. Your project topic must be approved by the instructor. Additional guidance and a rubric for the project will be provided after the first exam. Late projects will not be accepted.

Attendance and Participation:

Because this course relies heavily on group participation and material that supplements the textbook, attendance is mandatory. You must attend 26 of the 28 classes to receive full credit for attendance. Arriving late or leaving early will count as half a class absence. Students are responsible to notify the instructor if they are missing class and for what reason. Students are also responsible to make up any work covered in class. It is recommended that each student coordinate with a student colleague to obtain a copy of the class notes, if they are absent.

Learning is both more effective and more satisfying when you can be an active participant in the process. You are expected to attend every class meeting and to come prepared to discuss the readings as well as your solutions and questions to the homework problems. You are expected to actively participate in and stay on task during classroom activities and discussions. You are encouraged to offer suggestions and conjectures even if you aren't sure of the answers. In addition, you are expected to work with others, respect others' ideas, and celebrate others' successes. Students with lack of or inappropriate participation will be required to meet with the instructor to develop an action plan.

Expectations for Out-of-Class Study:

Mathematics is best learned by investing TIME. Beyond the time required to attend each class meeting, students enrolled in this course should expect to spend at least an additional 9 hours per week of their

own time in course-related activities, including reading, completing assignments, and preparing for exams.

University Policies and Information:

Academic Integrity: Students enrolled all UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.

I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

UT Arlington faculty members may employ the Honor Code in their courses by having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents' Rule* 50101, §2.2, suspected violations of university's standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student's suspension or expulsion from the University. Additional information is available at <https://www.uta.edu/conduct/>.

Attendance Policy: At The University of Texas at Arlington, taking attendance is not required but attendance is a critical indicator in student success. Each faculty member is free to develop his or her own methods of evaluating students' academic performance, which includes establishing course-specific policies on attendance. As the instructor of this section, I have established the attendance policy outlined in the expectations above. However, while UT Arlington does not require instructors to take attendance in their courses, the U.S. Department of Education requires that the University have a mechanism in place to mark when Federal Student Aid recipients "begin attendance in a course." UT Arlington instructors will report when students begin attendance in a course as part of the final grading process. Specifically, when assigning a student a grade of F, faculty report the last date a student attended their class based on evidence such as a test, participation in a class project or presentation, or an engagement online via Blackboard. This date is reported to the Department of Education for federal financial aid recipients.

Drop Policy: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session.

The last day to drop classes is March 29.

It is the student's responsibility to officially withdraw if they do not plan to attend after registering.

Students will not be automatically dropped for non-attendance. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (<http://www.uta.edu/aao/fao/>).

Disability Accommodations: UT Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including *The Americans with Disabilities Act (ADA)*, *The Americans with Disabilities Amendments Act (ADAAA)*, and *Section 504 of the Rehabilitation Act*. All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of disability. Students are responsible for providing the instructor with official notification in the form of a **letter certified** by the Office for Students with Disabilities (OSD). Only those students who have officially documented a need for an accommodation will have their request honored. Students experiencing a range of conditions (Physical, Learning, Chronic Health, Mental Health, and Sensory) that may cause diminished academic performance or other barriers to learning may seek services and/or accommodations by contacting:

The Office for Students with Disabilities, (OSD) www.uta.edu/disability or calling 817-272-3364. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability.

Non-Discrimination Policy: *The University of Texas at Arlington does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic information, and/or veteran status in its educational programs or activities it operates. For more information, visit uta.edu/eos.*

Title IX Policy: The University of Texas at Arlington ("University") is committed to maintaining a learning and working environment that is free from discrimination based on sex in accordance with Title IX of the Higher Education Amendments of 1972 (Title IX), which prohibits discrimination on the basis of sex in educational programs or activities; Title VII of the Civil Rights Act of 1964 (Title VII), which prohibits sex discrimination in employment; and the Campus Sexual Violence Elimination Act (SaVE Act). Sexual misconduct is a form of sex discrimination and will not be tolerated. *For information regarding Title IX, visit www.uta.edu/titleIX or contact Ms. Jean Hood, Vice President and Title IX Coordinator at (817) 272-7091 or jmhood@uta.edu.*

Electronic Communication: UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at <http://www.uta.edu/oit/cs/email/mavmail.php>.

Campus Carry: Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. Under the new law, openly carrying handguns is not allowed on college campuses. For more information, visit <http://www.uta.edu/news/info/campus-carry/>

Student Feedback Survey: At the end of each term, students enrolled in face-to-face and online classes categorized as "lecture," "seminar," or "laboratory" are directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student's feedback via the SFS database is aggregated with that of other students enrolled in the course. Students' anonymity will be protected to the extent that the law allows. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law and aggregate results are posted online. Data from SFS is also used for faculty and program evaluations. For more information, visit <http://www.uta.edu/sfs>.

Final Review Week: for semester-long courses, a period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

Student Support Services: UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include [tutoring](#), [major-based learning centers](#), developmental education, [advising and mentoring](#), personal counseling, and [federally funded programs](#). For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at <http://www.uta.edu/universitycollege/resources/index.php>.

Counseling and Psychological Services, (CAPS) www.uta.edu/caps/ or calling 817-272-3671 is also available to all students to help increase their understanding of personal issues, address mental and behavioral health problems and make positive changes in their lives.

The IDEAS Center (2nd Floor of Central Library) offers **free** tutoring to all students with a focus on transfer students, sophomores, veterans and others undergoing a transition to UT Arlington. To schedule an appointment with a peer tutor or mentor email IDEAS@uta.edu or call (817) 272-6593.

The Library's 2nd floor Academic Plaza offers students a central hub of support services, including IDEAS Center, University Advising Services, Transfer UTA and various college/school advising hours. Services are available during the library's hours of operation. <http://library.uta.edu/academic-plaza>

Emergency Exit Procedures: Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, [which is located to the left of the classroom](#). When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.

You are encouraged to subscribe to the MavAlert system that will send information in case of an emergency. Anyone can subscribe at <https://mavalert.uta.edu/> or <https://mavalert.uta.edu/register.php>

Emergency Phone Numbers:

In case of an on-campus emergency, call the UT Arlington Police Department at

817-272-3003 (non-campus phone)
2-3003 (campus phone)

You may also dial 911.

Non-emergency number 817-272-3381