College Geometry MATH 3312  
Department of Mathematics and Statistics  
Spring 2018

A. COURSE INFORMATION

Course number/section: MATH-3312.001 /201  
Class meeting time: W 3:30-5:20pm for lecture/ R 3:30-4:20 for lab  
Class location: CI 128 (lecture)/ CI 222 (lab)  
Course Website: bb9.tamucc.edu

B. INSTRUCTOR INFORMATION

Instructor: Dr. George Tintera  
Office location: CI 319  
Office hours: MWR, 1 to 3 pm.  
Telephone: (361) 825-6028  
e-mail: george.tintera@tamucc.edu  
Appointments: email me to make an appointment to meet outside office hours

C. COURSE DESCRIPTION

Catalog Course Description 3 sem. hrs. (2:2)  
A careful study of the foundations of Euclidean geometry by synthetic methods with an introduction to non-Euclidean geometries. An introduction to transformational geometry. Contains a laboratory component.

D. PREREQUISITES FOR THE COURSE

Prerequisites  
MATH 2413 and junior standing; MATH 3311 recommended.

Corequisites  
MATH 3312 - 201 (lab)

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

Required Textbook(s)  
- Euclid's *Elements*, available online at http://aleph0.clarku.edu/~djoyce/java/elements(elements.html

Optional Textbook(s) or Other References Supplies None
F. STUDENT LEARNING OUTCOMES AND ASSESSMENT

Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the courses student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

By the end of this course, students should be able to:

1. Review basic theorems in geometry.
2. Understand the roles of axiomatics, proofs, models and examples in geometry; be able to identify appropriate models for given sets of axioms; be able to write appropriate proofs.
3. Know and be able to apply and prove theorems about congruence of triangles and quadrilaterals.
4. Know and be able to apply and prove theorems about circles.
5. Know and work with transformations of the plane and their compositions.
6. Know the difference between Euclidean and non-Euclidean geometries and the role of the parallel postulate in distinguishing them.
7. Make explorations in plane and non-Euclidean geometries with a dynamic geometry software package.

G. INSTRUCTIONAL METHODS AND ACTIVITIES

The heart of the instructional method for this course is student activity. Students will be challenged to solve many problems from the text. The instruction will be by lectures with student participation and labs. The primary tool for use in the labs is the Geometer's Sketch Pad.

H. MAJOR COURSE REQUIREMENTS AND GRADING

Course grades will be based on Reading (30 points), In-Class Activity (20 points) Homework (170 points), Lab Work (130 points), Midterm (50 points) and Final Exam (100 points).

- Reading the assigned text Flatland: A Romance of Many Dimensions, by Edwin A. Abbott. We will have some class discussion about the text. Each Student will lead discussion of one part of the text and prepare discussion questions for that text. Also, you will expand on one of those questions or another agreed on by the instructor and write a 3 page
The paper should make reference to what you have learned during the course. It is due around April 18, 2018.

- In-Class activity: This will take place regularly during the lecture portion of the class (Wednesdays).
- Midterm. The exam will be towards the end of February and cover content to that point in the semester.
- Homework will consist of problems from the text assigned each lecture meeting and due the following lecture. Problems will be graded on the following scale: Exceeds Expectations, Meets Expectations, In Progress and Unsatisfactory. Problems that are in progress can be turned in again for regrading without penalty so long as it is done in a timely manner. Though the last day homework can be turned in is Friday, April 27. Unsatisfactory work cannot be turned in again for credit. Homework may be discussed with classmates, but the solutions turned in should be done individually. Homework in the text is at three levels: A, B and C.
  - For 170 points, nearly all A level problems assigned must meet or exceed expectations as should most B and C level problems. The rest should be in progress.
  - For 140 points, nearly all A level problems assigned must meet or exceed expectations and nearly all B and C level problems should be in progress.
  - For 110 points, nearly all A level problems should be in progress and many should meet expectations. Some B and C level problems should be in progress.
  - For 90 points, nearly all A level problems should be in progress.
- Lab Work Each lab is graded on a 10-point scale for completion and correctness.
- The Final Exam will be held from 1:45-4:15 PM on Monday, May 7. The final exam will be comprehensive.

Grading Scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>500 – 450</td>
<td>449-400</td>
<td>350-399</td>
<td>300-349</td>
<td>less than 300</td>
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I. COURSE CONTENT/SCHEDULE

Note: Changes in this course schedule may be necessary and will be announced to the class by the instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

<table>
<thead>
<tr>
<th>Week of</th>
<th>Chapter/Topics</th>
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<tbody>
<tr>
<td>Jan 15</td>
<td>Introduction, Axiomatics and Proof, Examples and Models. Lab 1, Intro to GSP and Discovering Geometry</td>
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Jan 22 | Incidence Geometry. Lab 2: Discovering Geometry  
Jan 29 | Length and Angle Measures. Lab 3: Knowing in Geometry  
Feb 5 | Triangle Congruence Theorems. Lab 4: To be determined  
Feb 12 | More on Triangles. Lab 5: The Taxicab Geometry  
Feb 19 | Review. Lab 6: To be determined  
Feb 26 | MIDTERM Quadrilaterals  
Mar 5 | Circles. Lab 7: Kites  
Mar 12 | Circles (II). Lab 8: Tessellations  
Mar 19 | Euclidean Geometry. Lab 9: Loci  
Mar 26 | Transformations. Lab 10: The Thirsty Coyote and Symmetry  
Apr 2 | Transformations (II). Lab 11: Triangle Transformations  
Apr 9 | Non-Euclidean Geometry. Lab 12: Models of Non-Euclidean Geometry  
Apr 16 | Non-Euclidean Geometry (II). Lab 13 Theorems in Non-Euclidean Geometry  
Apr 23 | Non-Euclidean Geometry (III). Transformations in Non-Euclidean Geometry  
Apr 30 | Review

**J. COURSE POLICIES**

**Attendance/Tardiness**  
Punctual class attendance is highly recommended.

**Late Work and Make-up Exams**  
If a student **misses an exam**, the student’s grade on the final exam will serve as a replacement for the missed exam.

Late homework and labs are not accepted.  
Long term illness and official university business are the only exceptions to these rules.
Extra Credit
There is no extra credit given in this course. Just study diligently throughout the semester.

Cell Phone Use
Please turn off cell phones before class starts. I will ask any student with their phone out to turn it off and put it up. If this happens multiple times with the same student, I will ask the student to leave class.

Laptop Use
Please do not open laptops during class. This can distract others from learning, and part of my job is to provide a class atmosphere that aids student learning.

Food in Class
Please do not eat during class. This can distract others from learning, and part of my job is to provide a class atmosphere that aids student learning.

Missed Exam
See “Late Work and Make-up Exams” above.

Participation
Strong, consistent class participation is expected from all students.

K. COLLEGE AND UNIVERSITY POLICIES

• Academic Integrity (University)
  University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating - for example, illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a grade of zero, and an academic misconduct form will be filed.

• Classroom/Professional Behavior
  Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructors ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all
instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

- **Statement of Civility** Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

- **Deadline for Dropping a Course with a Grade of W (University)** I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with your academic advisor, the Financial Aid Office, and me, before you decide to drop this course. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Please consult the Academic Calendar (http://www.tamucc.edu/academics/calendar/) for the last day to drop a course.

- **Grade Appeals (College of Science and Engineering)** As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at http://www.tamucc.edu/provost/university_rules/index.html and the College of Science and Engineering Grade Appeals webpage at http://sci.tamucc.edu/students/GradeAppeal.html

For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

- **Disability Services**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities.
Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.

If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

http://disabilityservices.tamucc.edu/

• **Statement of Academic Continuity**
  In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

L. **OTHER INFORMATION**

• **Academic Advising**
  The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walkins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

**GENERAL DISCLAIMER**

I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.