I. COURSE INFORMATION

1. Meeting Time & Place: M W 2:00-3:50 pm. CS-108 and Labs T R 2:00-3:50 pm CI-223
2. Professor: Dr. Alex Sadovski
3. Office Phone: (361) 825-2477
4. Office Address: CI-338
5. E-MAIL Address: Alexey.Sadovski@tamucc.edu
6. Web Page Address: http://www.sci.tamucc.edu/~sadovski
7. Office Hours: MW 12:00 noon to 1:30 PM. Appointments also available. Office hours subject to meetings related to other duties on campus. They may change during the semester.

II. COURSE DESCRIPTION

This course is about geometry. We will look at basic concepts of geometry and their relationship to theorems through the synthetic process. Models for geometry will include both Euclidean (the plane) and non-Euclidean (spheres, cones, hyperbolic disks, etc). We will investigate how properties, theorems and definitions vary among models.

III. PREREQUISITES for the COURSE

MATH 3311 or permission of the professor.

IV. TEXT and OTHER SUPPLIES REQUIRED


V. COURSE OBJECTIVES

- You begin the class by studying the definition of basic concepts and their relation to theorems through writing. You need to do this so that when you encounter models of geometry in this and other courses and in your careers, you will be able to determine why various interpretations are used.
- You will understand geometry through a historical perspective and through its various cultural influences.
- You will learn how to make inferences and applications of geometry to real life based on appropriate models. We will do this using a geometry package to perform what-if's and investigations.
As opportunities arise during the semester, you will learn mathematical skills that you may not have seen, or didn't understand the first time, or just plain forgot.

VI. INSTRUCTIONAL METHODS AND ACTIVITIES

The instruction will be by lectures, discussions, and labs-seminars. The primary tool for use in the labs is the Geometer's Sketch Pad.

VII. EVALUATION AND GRADE ASSIGNMENT

Course grades will be based on Reading (10 points), Homework in the form of take-home assignments (30 points), Quizzes (30 points), Midterm test (15 points), Final Exam (15 points).

- **Reading** The assigned text Flatland: A Romance of Many Dimensions, by Edwin A. Abbott. We may have some class discussion about the text according to the schedule. For each discussion, you should be prepared with answers to the questions located at the end of syllabus which pertain to the material up to that section. Also, you will expand on one of those questions or another agreed on by the instructor and will write a 3 page paper. The paper should make reference to what you have learned during the course. It is due by last class in November at 3 PM.
- **Quizzes** will be on regular basis during class and labs-seminars.

**Grading Scale:**

<table>
<thead>
<tr>
<th>Grade</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>F</th>
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</thead>
<tbody>
<tr>
<td>Score</td>
<td>100 -90 points</td>
<td>80-89 points</td>
<td>70-79 points</td>
<td>60-69 points</td>
<td>less than 60 points</td>
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VIII. TENTATIVE COURSE SCHEDULE    N/A

IX. CLASS POLICIES

I. **Official Part**

- This class is run for the mathematical development of all participants. All students must accept responsibility for participating and consequences of not participating.
- You are the only person responsible for your registration. No one will drop you for not attending class. Please make sure that you drop the class yourself if you are not able to continue coming to class. Please note that the last day to drop the class with a grade of "W," whatever that is. Note that grades of SA (stopped attending) are converted to F's by the Registrar.
- Please turn off phones and beepers before coming to class. Please limit email and chatting to breaks during the computer lab.
- Attendance is expected. It is the only way to do in-class work.
- All absences from exams, quizzes, and the final exam will be considered unexcused unless they are documented in advance as excusable with the instructor or as soon as possible in the case of emergencies. No credit will be awarded for unexcused absences.
- I will not use class roll at any time, because it is your responsibility to be in class and attend to the process of learning (see also II.2.).
• Please, print your name on all assignments and tests: your professor is not a decoding device.
• If you have questions you MUST ask, you have the right to interrupt lecture or discussion at any time (see also II.1).
• I am always open for all questions and discussions during the class and office hours. You can always arrange meeting with me at any another time suitable for both sides.
• No multi-choice tests and quizzes. All tests will consist of problems you have to solve from the beginning to the end. Partial credit will be given for any parts of problems solved. The policy is open books and notes, no talking, no cheating.
• No open books and notes during quizzes.
• Home works must be turned on time.
• There is no social promotion in my classes. Grades are given only for knowledge acquired (see also II.9.).

II. Unofficial part.
II.1. There are no "stupid" questions, there are only bad teachers.
II.2. All you do, you do it for yourself, not for the professor.
II.3. Do not be concerned about grades, be concerned of knowledge, because grades are the steepest increasing function of knowledge (here is an example of math language).
II.4. Do not be afraid of problems, let them be afraid of you.
II.5. Only doing nothing may be without mistakes. If you don’t make errors, you don’t learn anything.
II.6. Do not be nervous - it may be only worse.
II.7. Common sense is the base of all decisions, together with knowledge they can do almost everything (even pass this course!).
II.8. Keep your particles together.
II.9. The only valid excuse for not knowing the subject is a sudden death.

Notice to Students with Disabilities: Texas A&M University-Corpus Christi complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. If you suspect that you may have a disability (physical impairment, learning disability, psychiatric disability, etc.), please contact the Services for Students with Disabilities Office, located in Driftwood 101, at 825-5816. If you need disability accommodations in this class, please see me as soon as possible. ** Grade Appeal Process. As stated in University Rule 13.02.99.C2, Student Grade Appeals, 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 Rule13.02.99.C2, Student Grade Appeals, and University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules Web site at http://www.tamucc.edu/provost/university_rules/index.html. For assistance and/or guidance in the grade appeal process, students may contact the Office of Student Affairs.
Flatland Reading Questions

[Acknowledgement: These questions were written by R. Pruim.]

1. How do the various shapes in Flatland appear to the author (A Square)?
2. Answer the following questions about houses in Flatland:
   (a) What shape are most houses in Flatland?
   (b) Why are triangular and square houses forbidden by law in most places?
   (c) Why are there no windows?
3. What is the "Law of Nature" regarding the number of sides of sons compared with their fathers? Is the Law of Nature always followed?
4. Why does the author find it important that sometimes a True Equilateral is born of Isosceles parents? What occurs as a result of such a birth?
5. Give a quick overview of the "Laws concerning Women" in Flatland.
   (a) Why were they instituted?
   (b) Why do the wisest Circles and statesmen favor fewer rather than more restrictions on women?
   (c) What are the disadvantages of these restrictions (in the view of A Square)?
6. By what means do Flatlanders recognize each other and distinguish between shapes?
7. Why does A Square find "Irregulars" so dangerous to society?
8. In the description of the Irregulars, there is a hint at a possible cause for their social deviancy. What is this potential cause? What do you think Abbott is trying to say about his society in his description of Irregulars?
9. What were the events leading to the Colour Revolt and its eventual demise?
   (a) What were the long term consequences of the failure of the Colour Revolt?
   (b) What might the long term consequences have been had the Colour Revolt succeeded?
   (c) What social commentary is Abbott making through his description of the Colour Revolt?
10. What is the chief doctrine of the Priests?
11. What does A Square see as the positive and negative consequences of the prohibition on the education of women? What do you think Abbott is try to imply about education in 19th century England?
12. What difficulties did the King of Lineland and A Square have in understanding each other? Who was more able (in the end) to understand the other? Why?
13. Why does A Square have difficulty recognizing the shape of the "Stranger" and what does he do about it?
14. How does the Stranger try to explain the fourth dimension to A Square? How successful are his attempts?
15. What discussions from class and from the text book are similar to the discussions between the Stranger and A Square?
16. When A Square first saw a cube, what did he think it looked like? Why?
17. How does the Sphere respond to A Squares questions about the fourth and higher dimensions?
18. How many dimensions does A Square come to believe there must be? Why?
19. Describe A Square's vision of the Sphere.
20. Compare the scenes early in Part 2 and near the end of Part 2 where A Square is speaking with his grandson (a hexagon).
   (a) How do these two scenes make you feel?
   (b) What do you think Abbott is trying to say by including these two scenes?
21. What is the eventual fate of A Square?