



Topics in Geometry

MA 341-001

Fall Semester 2009

Classroom: 339 Whitehall Classroom Building

Time: MWF 2:00-2:50 PM

Professor: Dr. David Royster

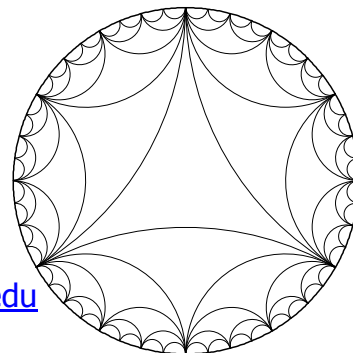
Office: Patterson Office Tower 359

Office Hours: MWF 1:00-2:00 or by appointment

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URL: <http://www.ms.uky.edu/~droyster>



Class Homepage: <http://www.ms.uky.edu/~droyster/courses/fall09/MA341>

Text: *Foundations of Geometry* by Gerard A. Venema, ISBN: 0-13-143700-3.

Number of Class Meetings in the Semester: 45 classes

Prerequisites: Consent of the Department

Objective: We will discuss the development of geometry and geometries through a study of the history of Euclid's Fifth Postulate. We will discuss the work of Saccheri, Bolyai, Lobachevskii, Gauss, Poincaré, and others in the development of geometry. We will study Euclidean geometry and hyperbolic geometry.

Tests: We will have homework, classwork and a final. The schedule indicates that the time for the Final Exam is Monday, May 5 from 5:00 - 7:45 PM. We are required to meet during this time by University policy.

Grades: Your course grade will be determined by the homework, the classwork, and the final.

Purpose: The purpose of this course is twofold. First, in this course you are introduced, or re-introduced, to the method of *Mathematical Proof*. We will be given a certain set of *AXIOMS* and *UNDEFINED TERMS*. The purpose here is for you to learn how to prove theorems, facts, lemmas, *etc.* in a **formal mathematical system**. This is a system in which all of the axioms and undefined terms are stated at the beginning, and not introduced when people feel that they may be needed. This is an easier way in which to learn how to prove theorems than some other areas offer.

In doing this, we will develop as much Geometry as we possibly can. You will be introduced to new and interesting areas in Geometry, with much of our semester spent on the study of *Hyperbolic Geometry*. You will learn that there is a lot more to Geometry than you may have dreamt of in your philosophies.

We will learn one of the Fundamental Theorems of Mathematics that many students never get to see.

Class Policies: There are several policies to which you must pay heed.

- i) Attendance is extremely important in a class of this level. If you feel that you do not need to attend this class, you are in the wrong classroom—go find a course in which you will be challenged and in which you will learn something new.
- ii) You are allowed one unexcused absence and one excused absence in this course. Any absences beyond this will have an impact on your grade for the course.
- iii) You have been given a day-by-day course syllabus. You NOW KNOW when we have class and when we do not have class. I expect you to be here on all days that we have class.
- iv) I will not accept late homework. If for some reason you miss a class and it is excusable, see me as soon as possible to discuss the situation.
- v) Academic dishonesty will be punished severely. Be cognizant of Article II of the *Student Code of Conduct*.
- vi) Be on time to class and remain until dismissed. Do not leave in the middle of class.

Inclement Weather Policy: The University of Kentucky Severe Weather Policy can be found at http://www.uky.edu/PR/News/severe_weather.htm. The UK Infoline at (859) 257-5684, UK TV Cable Channel 16 and 19, or the UK Web site at www.uky.edu are the best places to find the most up-to-date situation. In the event that we have *inclement weather*¹ but the University does not close or cancel classes, and I have to cancel the class, a message to that effect will be left on my voicemail (859–257–1258) and I will email every member of the class (if I have access to email).

If you feel that travel during *inclement weather* would be hazardous, then try to inform me as soon as safely possible. You will be given the opportunity to make up any work missed or due on that day. As always, each student is responsible for any work missed and will be expected to get the notes from another student or from the web.

¹ Snow, ice storm, high and dangerous winds – not heavy frost.