

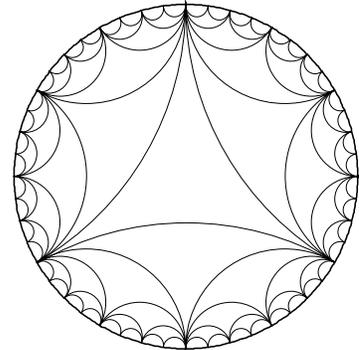


## Non-Euclidean Geometry

MATH 6118–090

Fall Semester 2002

**Classroom:** Denny 216  
**Time:** W 5:30–8:20 PM  
**Professor:** Dr. David Royster  
**Office:** Colvard 5023  
**Office Hours:** W 4:30 – 5:30, or by appt  
**Office Phone:** 704–687–4543  
**email:** droyster@email.uncc.edu  
**URL:** <http://www.math.uncc.edu/~droyster>



**Class Homepage:** <http://www.math.uncc.edu/~droyster/courses/fall02>

**Text:** *A Survey of Classical and Modern Geometries with Computer Activities*, by Arthur Baragar, *Geometer's Sketchpad* (Student Edition) and class web pages.

**Number of Class Meetings in the Semester:** 16 classes

**Prerequisites:** Consent of the Department

**Objective:** We will discuss the History of Euclid's Fifth Postulate and some of the attempts to prove it. We will discuss the work of Saccheri, Bolyai, Lobachevskii, Gauss, Poincaré, and others in the development of hyperbolic geometry. We will study hyperbolic trigonometry and its relation to the hyperbolic geometry. We will spend a little time studying spherical geometry.

**Tests:** We will have homework, classwork and a final. The schedule indicates that the time for the Final Exam is Wednesday, May 8 from 7:00 – 10:00 PM. We need to discuss this.

**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 most 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.

We will proceed to the edge of current research in Mathematics—or die trying!

**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 the *Code of Student Academic Integrity*.
- vi) Be on time to class and remain until dismissed. Do not leave in the middle of class.