

# MATH 402 Non-Euclidean Geometry

## Fall 2015

**Instructor:** Vesna Stojanoska

**Lectures:** X13 MWF 12pm 143 Altgeld Hall  
F13 MWF 2pm 243 Altgeld Hall

**Availability:**

- *Office Hours:* Tuesdays 2:00-2:50pm, Thursdays 3:00-3:50pm, or by appointment, in 323 Illini Hall

- *Email:* vesna AT illinois.edu

**Official course description:** Historical development of geometry; includes tacit assumptions made by Euclid; the discovery of non-Euclidean geometries; geometry as a mathematical structure; and an axiomatic development of plane geometry.

**Prerequisites:** MATH 241; MATH 347 or MATH 348, or equivalent; or consent of instructor.

**Textbook:** Geometry (with Geometry Explorer), Michael Hvidsten

This book is out of print, but the author has generously made an electronic copy available for personal use. It can be found at <http://new.math.uiuc.edu/public402/Hvidsten.pdf>. You could also try to purchase a used copy.

**Software:** Geometry Explorer.

Download from <http://homepages.gac.edu/~hvidsten/gex/download-3.0.html>.

**Grading scheme:**

Reflection papers and project reports	14%
Homework	10%
Participation	1%
Midterm exams	3 x 15%
Final exam	30%

**Important information:**

- *Reading assignments* for each class will be announced ahead of time, these should be *completed before class*, and re-read after class as many times as necessary. Reading and learning mathematics is a slow process and requires a lot of reflection. Here are some hints:
  - While reading, close the book often and try to work out an argument independently. This can be done before as well as after reading the argument from the book.
  - Discuss with others. Your classmates are a great choice as they'll have thought about the material as well, but sometimes just the fact of expressing your ideas out loud helps to shape and improve them.

- Every week either a reflection paper or a project report will be assigned, to be turned in Monday in class.
  - *Reflection papers* are informal writing assignments. They should be 1-2 pages long and contain your thoughts on the material covered the week before and (hopefully) address issues beyond that. A guiding question to be addressed in the paper will be posted well in advance. These assignments are exploratory in nature; therefore formal arguments and formal correctness are unimportant for this assignment, your own *ideas* are crucial. Think of these writings as your math journal. Allow about one hour for each.
  - *Project reports* will be as described in the book. Some weeks I will assign a selected project from the book.

- *Homework* will be assigned weekly, due every Friday in class. These will be problems to be solved in a formal mathematical way, and the formal correctness of the argument will matter.

**Crucial:** You are strongly encouraged to discuss homework problems, lab reports, and reflection papers with your classmates. However, you must write the assignment on *your own*. This does not mean simply the physical act of writing, but that the write-up should be done without assistance from any sources (including people). Your submitted paper should include the names of your collaborators (or discussion buddies), as well as all sources consulted.

- *Participation:* Everyone is expected to be an active class participant. I will not take attendance, but I will notice frequent absentees.
- *Midterm exams* will be on the following dates and times:
  - Exam 1: Thursday September 24, 7-8pm
  - Exam 2: Thursday October 22, 7-8pm
  - Exam 3: Thursday November 19, 7-8pm

Rooms will be additionally announced. The three midterm exams are on Thursday evenings, *there will be no class on the Friday following an exam*. Please reserve these dates and times; if you have a scheduling conflict, let me know ASAP. If you have to miss an exam because of a valid documented excuse (as described in the student code), you will either be given a make-up exam, or will be assigned a grade for that exam which equals the average of the two other exams. If possible, let me know as soon as possible before the exam if you cannot make it.

- *The final exam* will be comprehensive. Time and date will be announced soon.
- *Office hours* are your chance to learn from the instructor in an informal setting. To best profit from them, come prepared. However, do *not* expect to be given ready solutions to homework problems.