MATH 3120: INTRODUCTION TO GEOMETRY

UVa–Wise. Department of Mathematics and Computer Science. Spring 2016.

BASIC INFORMATION

Class meetings: Tuesday and Thursday, 2:00–3:15 in Darden 122.

Instructor: Dr. Matthew Harvey

Office: Darden Hall 235

Office phone: 276-376-4571

Office hours:

- Monday 9:00–10:00, 11:00–12:00
- Tuesday 9:30–12:00
- Wednesday 9:00-10:00, 11:00–12:00
- Thursday 9:30–12:00
- Friday 9:00-10:00, 11:00-12:00

Email: msh3e@uvawise.edu

Web: www.mcs.uvawise.edu/msh3e/

COURSE DESCRIPTION

The prerequisite for this course is successful completion of Math 3100 with a grade of C or better or permission of the instructor.
The purpose of this class is to provide a modern perspective on Euclidean and non-Euclidean geometries. We will begin the course with a study of neutral geometry, with an emphasis on a proper and careful development of the subject following the axioms of Hilbert. Then we will move on to selected topics in Euclidean geometry– similarity, the inscribed angle theorem, and some of the triangle concurrence theorems to name a few. During this part of the course, we will use compass and straightedge constructions extensively to illustrate the results. In the third part of the course, we will study Euclidean geometry from the point of view of transformations and inversions. Finally we will look at hyperbolic geometry using the Poincaré disk as our model. By the end of the course, you should be able to describe what an axiomatic system is and you should be able to prove results in such a system; you should be able to identify the key similarities and differences between Euclidean and hyperbolic geometry; you should be able to describe a few of the more advanced theorems of Euclidean geometry; you should be able to use transformations in calculations and in proofs; and you should be able to perform basic calculations in hyperbolic geometry. The foundations of Euclidean geometry are over 2000 years old, while the ideas of non-Euclidean geometry and geometric transformations pervade contemporary mathematical thought. We will cover a lot of material in a short period of time.

THE EVERYDAY CLASS

Your presence in class is expected. In class, you are expected to pay attention and contribute. At the very least, you must not be a distraction to your fellow classmates. Please silence all electronic devices. Disruptive behavior will not be tolerated. If I feel that you are a distraction to the rest of the class, I will ask you to leave.

GRADES

Homework will be assigned and collected approximately once a week. You are allowed to collaborate with classmates on the homework, but you must turn in your own work. Collaboration means working together to solve the problems– copying will not be accepted. Your work should be neat, well-

organized, and stapled. Answers should be clear and well-reasoned.

During the semester there will be two in-class tests (see the attached schedule). In each addition, students will work on a project (to be presented during the last week of the semester) that will count for a test grade. A typical test will consist of between 10 and 15 questions. These will include definitions, calculations, and some proofs.

- No make-up exams will be given unless you can present a valid documented excuse. In this case, you will either take a make-up exam or be given a grade based on other assignments, whichever I feel is more appropriate.
- Your final exam grade may be used to replace you lowest test grade.
- At the end of the semester you will have a comprehensive final exam.
- Course grades will be assigned according to these percentages:
  homework and quizzes: 25%
  tests and project: 50%
  final exam: 25%

DISABILITY SERVICES

If you need course adaptation or accommodation because of a disability or if you have emergency medical information to share with me, please make an appointment to talk with me as soon as possible. To make inquiries regarding disability services, please contact Whitney Wells, Director of Disability Services, at 276-328-0265 or wew3x@uvawise.edu, or visit the Academic Support Center in Zehmer Hall.

TITLE IX

The University of Virginia's College at Wise strives to provide a working and educational environment for all faculty, staff and students that is free from sexual misconduct and harassment. Sexual harassment, sexual assault and other acts of sexual misconduct are forms of sex discrimination prohibited by Title IX. The College reaffirms its commitment to maintain a campus environment emphasizing the dignity and worth of all members of the college community. To view UVa-Wise's sexual misconduct and harassment policy visit: www.uvawise.edu/compliance/TitleIX. If you have questions or concerns, please immediately contact:

Tabitha Smith, Title IX Coordinator
Office of Compliance and Conduct
1 College Avenue, Wise, VA 24293
Office: 276-328-0131
Cell: 276-870-5065
Fax: 276-376-4876
Email:tabitha.smith@uvawise.edu

CHEATING

Cheating will not be tolerated. Any student caught cheating will receive a zero on the assignment, will be reported to the Honor Court, and if found guilty may receive an F for the course.