

Syllabus for Math 323s: Geometry from the Ancient Greeks to Einstein

Instructor Information:

Hubert Bray, Professor of Mathematics and Physics, Duke University
bray@math.duke.edu, (919)757-8428, Physics 189, www.professorbray.net

Text:

"A Survey of Classical and Modern Geometries," version 1.5, by Arthur Baragar. (Freely available on the course website, with permission from the author.)

Course Objectives:

In this class we will study the geometries of the plane, the sphere, and hyperbolic space. We will also focus on the historical and axiomatic development of these three geometries. Finally, we will see how changing one assumption – a sign in the Rule of Pythagoras – leads to Einstein's unification of space and time called Special Relativity.

Quizzes:

Many classes will begin or end with a quiz over assigned homework problems, material already covered in class, and videos assigned to watch outside of class. Students will submit their quizzes using gradescope during class.

Homework:

Due by gradescope within 2 hours of the end of class on the date listed. Try to get most of the homework done before class.

Papers:

Each student will write 4 papers (5-10 pages) on the topics of their choice related to the class, broadly interpreted. Both the papers and the quizzes will be submitted using gradescope.

Grading:

30% Quizzes and Homework

60% Four papers. Each student will present their paper in 5 minutes.

However, the grade is based on just the paper, not the presentation.

10% Class Participation