



Catalog Description:

Topics in Euclidean, spherical, and hyperbolic geometries. Connections to high school mathematics, calculus, and the theory of groups are emphasized.

Prerequisite:

C- or better in 3345 and in C- or better in 2568 or 5520H; or credit for 345, and credit for 568, 571, or 520H; or graduate standing.

Text:

Open-source textbook:

A workbook of two-dimensional geometries, Clemens and Snapp.

PDF:

<https://github.com/mooculus/advancedGeometry/releases/download/v1.0/workbookOfTwoDimensionalGeometries.pdf>

Source: <https://github.com/mooculus/advancedGeometry>

Purpose:

Starting from questions accessible to Euclid, this course treats Euclidean, spherical, and hyperbolic geometry from a unified point of view.

To encourage the student to become a “do-er” of mathematics, in this course essentially write their own “textbook,” as the proofs of a majority of the theorems are left to the student.

Topics List:

1. Neutral geometry.
2. Euclidean geometry.
3. Spherical geometry.
4. Hyperbolic geometry.