

Mathematics 410
Geometry (3)
(Effective Spring 2012)

Prerequisite: Math 314.

Catalog Description: Euclidean geometry (Birkhoff's and Hilbert's Postulates), non-Euclidean geometries (hyperbolic and elliptic), finite geometries, transformational geometry, theory of area.

Learning Outcomes for Major: This course addresses one or more of the student learning outcomes for the major. Upon completion of his/her degree from the University of Tennessee at Martin with a major in mathematics, the graduate will be able to:

- i. apply mathematical concepts and principles to perform numerical and symbolic computations.
- ii. use technology appropriately to investigate and solve mathematical and statistical problems.
- iii. write clear and precise proofs.
- iv. communicate effectively in both written and oral form.
- v. demonstrate the ability to read and learn mathematics and/or statistics independently.

Teaching Objectives: The student will:

1. Work with finite geometries and their models.
2. Understand Hilbert's and Birkhoff's characterizations of Euclidean geometry.
3. Distinguish between neutral and Euclidean theorems.
4. Prove and use results in Euclidean geometry.
5. Use transformations to prove theorems in Euclidean geometry.
6. Write analytic equations for Euclidean transformations.
7. Understand models for hyperbolic geometry.
8. Perform basic computations in hyperbolic geometry.

Text(s): The Foundations of Geometry, second edition, Gerard A. Venema, Pearson, 2012. ISBN: 0-13-602058-5.

Disability Services: The University of Tennessee provides reasonable accommodations (academic adjustments and auxiliary aids) to ensure equal access to educational content and university programs for students with disabilities. Any student eligible for and requesting accommodations due to a disability must provide instructors with a letter of accommodation from Disability Services. For additional information, please contact the Disability Services office at 209 Clement Hall, (731) 881-7605.