

Date Prepared: May 3, 2004

COURSE OUTLINE

X New ___ Revised

Effective Date: Fall 2004

1. **COURSE PREFIX NUMBER:** MTH 250 **CREDIT HOURS:** 3
2. **COURSE TITLE:** College Geometry
3. **PREREQUISITES:** A placement recommendation for MTH 250 and MTH 174 or equivalent. Lecture 3 hours per week.
4. **COURSE DESCRIPTION:** Presents topics in Euclidean and non-Euclidean geometries chosen to prepare individuals for teaching geometry at the high school level. Studies Euclid's geometry and its limitations, axiomatic systems, techniques of proof, and Hilbert's geometry, including the parallel postulates for Euclidean, hyperbolic, and elliptic geometries.
5. **CONTENT:** (Major Headings)
 - a. Euclid's Geometry
 - b. Techniques of Proof
 - c. Logic and Proof
 - d. Hilbert's Axioms & Geometry
 - e. Axiomatic Systems
 - f. Neutral Geometry
 - g. Non-Euclidean Geometry
6. **GENERAL COURSE OBJECTIVES:**

Upon successful completion of the course, the student will be able to

 - a. Use proper proof technique within the confines of Euclidean Geometry.
 - b. Use proper proof technique within the confines of Neutral Geometry, including the alternate interior angle theorem, the Saccheri-Legendre Theorem, and equivalence to the parallel postulate.
 - c. Use Euclid's geometry and its limitations, axiomatic systems, and Hilbert's geometry, including the parallel postulates for Euclidean, hyperbolic, and elliptic geometries.
 - d. Use proper proof technique within the confines of various Non-Euclidean Geometries including hyperbolic geometry, the Beltrami-Klein model, and Poincare models.
 - e. Understand the development and history of geometry from ancient times, through Euclid, the development of Non-Euclidean geometries, Einstein, and string theory and how it has affected man's relationship with mathematics, science, and philosophy.