

Mathematics 3110 (UMEP)
Modern Geometry
Spring 2008

Instructor: Dr. Robert Heal, Professor
Department of Mathematics and Statistics
Lund Hall 320c, 797-2853
bob@math.usu.edu

Course Objectives: This course serves as a transition from the intuitive understanding of geometry to the more rigorous axiomatic development of Euclidean geometry. Emphasis is placed on understanding, constructing, and writing proofs. A historical perspective is also provided by considering some of the famous proofs, constructions, problems, and personalities in the history of geometry. *Geometer's Sketchpad*, a modern computer program that is available in most high schools, is integrated throughout the course and should substantially assist in understanding conjectures and theorems.

Catalog Description: Euclidean and non-Euclidean geometry with an emphasis on the historical significance of the parallel postulate (Given a line L and a point p not on L , there exists a unique line through P and parallel to L). Important geometric theorems are derived as consequences of the basic axioms. Prerequisite: Math 1220 (3-credits)

Required Instructional Materials:

Textbook: *Geometry: Theorems and Constructions*, Allan Berele and Jerry Goldman, Prentice Hall, 2001, ISBN 0-13-087121-4.

Software: [*Geometer's Sketchpad*](#), Key Curriculum Press, 2005.

Computer: During each class period, students are expected to have access to a computer with a web connection.

Examinations:	Test 1	100 points
	Test 2	100 points

Assignments: Written assignments will be collected and a portion of each will be graded. The total of all homework will be worth 200 points. Late assignments will not be accepted without permission.

Grades: Term grades will be based on the 400 points indicated above.

In 1623 Galileo wrote:

Philosophy is written in this grand book - I mean universe - which stands continuously open to our gaze, but it cannot be understood unless one first learns to comprehend the language in which it is written. It is written in the language of mathematics, and its characters are triangles, circles, and other geometrical figures, without which it is humanly impossible to understand a single word of it; without these,

one is wondering in a dark labyrinth without which it is humanly impossible to understand a single word of it; without these, one is wondering in a dark labyrinth.