Hunter College of The City University of New York

MATH 331 Geometries 3 hrs, 3 cr

Text: Linear Geometry with Computer Graphics by J. Loustau and M. Dillion; Dekker

Preliminaries

1.2 Fields
1.3 Vector Spaces
1.4 Linear Transformations
1.5 Cosets of a Vector Space
1.6 Invariant Subspaces

Symmetric Bilinear Forms

2.2 Symmetric Bilinear Forms
2.3 Congruence
2.4 Orthogonal Complements
2.5 Orthogonal Bases
2.6 Witt's Cancellation Theorem
2.7 Isotropic and Anisotropic Spaces
2.8 Functions on Inner Product Spaces

Plane Geometries

3.1 Introduction
3.2 The Affine Plane
3.3 The Affine Group
3.4 Postulates for the Euclidean Plane
3.5 Inner Product Planes
3.6 Projective Planes
3.7 Conic Sections

Homogeneous Spaces in R^n

4.2 Topological Groups
4.3 Homogeneous Spaces
4.4 Geometry on Homogeneous Spaces
4.7 Differentiable Manifolds