

GEOMETRY I

Mathematics

Professor G.Korchmaros and lecturer: Dr. D. Labbate

Language: Italian (english on request)

Contents: Linear Algebra, affine and euclidean geometry.

Books: E. Sernesi, Geometria 1, Bollati Boringhieri .

Learning outcomes:

Knowledge of the standard general theory of Linear algebra and Analytic geometry, and familiarity with the use of its rigorous methods especially in the proofs. Improvement on expository skills, ability to synthesize and plan.

Teaching techniques:

Course outline: Vector spaces. Matrices. Solutions of linear equation systems: Gauss- Jordan matrix elimination. Linear dependence and independence, basis and dimension of a vector space. Range of a matrix Determinant. Cramer's rule. Solutions of linear equation systems with a parameter. Methods to compute the inverse of a matrix. Linear transformations: eigenvalues and eigenvector, Diagonalization of a linear map: canonical and Jordan forms. Quadratic and bilinear forms. Affine spaces of dimension 2 and 3. Euclidean vector spaces. Euclidean spaces of dimension 2 and 3. Classification of conics in the Euclidean plane.