

INTRODUCTION TO ALGEBRAIC GEOMETRY AND NUMBER THEORY

Graduate Course (Algebra II) for the Academic Year 2004-2005

by Lucien Szpiro.

This course is for students who have the level of Algebra I as it is taught here at the Graduate Center . Vector spaces over a field, modules and ideals over a ring, noetherian rings and the basic theorems of Hilbert (finite basis theorem and Nullstellensatz) will be considered are known or will be very quickly reviewed. We will teach the following:

- 1- Tensor products and localisation
- 2- The picard Group
- 3- Affine and projective schemes. Blow ups
- 4- Differentials , differents and discriminants
- 5- Height of rational points of a scheme over a number field

Bibliography

R.Hartshorne “Algebraic Geometry” (Springer Verlag)
I.Shafarevich “Basic Algebraic Geometry” I and II (Springer Verlag)
L.Szpiro “Basic Arithmetic Geometry” (Notes by F.Lengyel partially on my web site at gc.cuny.edu)