Faculty of Sciences

MAT1331   Commutative algebra

[45h] 4 credits

This course is not taught in 2005-2006
This course is taught in the 2nd semester
Language: French
Level: First cycle

Aims

The course aims to give an introduction to commutative algebra and to elementary algebraic geometry. After this course, students will be able to :
Master the arithmetic properties of polynomials and to manipulate these explicitly, including with the help of software of symbolic calculations.
Determine the solutions of complex algebraic systems;
Interpret in geometric terms the operations on the algebraic systems.

Main themes

Introduction to commutative ring theory in the concrete situation of polynomials with several variables : euclidian division, unique factorization, quotient rings, Hilbert basis theorem.
Elimination theory and its geometric interpretation.
Subgroups in the algebra of affine spaces and ideals of polynomials : Hilbert's nullstellensatz.

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

Prerequisite : Linear algebra course