



MAT1331 Commutative algebra

[45h] 4 credits

This course is taught in the 2nd semester

Teacher(s): Jean-Pierre Tignol
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

Other credits in programs

MATH13BA	Troisième année de bachelier en sciences mathématiques	(4 credits)	Mandatory
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