Mint course "Inverted class"
An invitation to arithmetic geometry

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This course is an "inverted class" in the sense that all lectures are given by the students. The course is open to master students from M1 RI and M2 RI.

This course aims at introducting basic concepts common to two classical theories: a) algebraic number theory; b) algebraic curves over an arbitrary ground field. At the same time, this will be a good opportunity for introducing classical concepts of commutative algebra (integral closure, Noetherian rings, Krull dimension).

The temptative program corresponds to the first four chapters of the book by Dino Lorenzino (see below), more precisely:

1. Integral closure
2. Plane curves
3. Factorization of ideals
4. Discriminants

Topics covered and interconnected include: rings of integers, ramification, localization, Dedekind domains, discrete valuation fields.

The lectures will be based on the book

- Dino Lorenzini, *An Invitation to Arithmetic Geometry*, Graduate Studies in Mathematics vol. 9, American Mathematical Society, 1996.

Another relevant source is

- Pierre Samuel, *Théorie algébrique des nombres*, Hermann, collection Méthodes, Paris, 1967.