

## Spring lectures in algebraic Geometry

### Applications in arithmetic of some classical constructions in algebraic geometry

**Abstract.** In recent years, there have been a number of applications in arithmetic (in particular, in arithmetic statistics) of some classical constructions in algebraic geometry. These applications have been obtained by developing a theory over the integers of certain classical algebraic geometry constructions, and then applying newly developed techniques from the geometry of numbers. We will survey some of these constructions and describe the corresponding arithmetic applications, starting with questions relating to the enumeration of small-degree number fields and their class groups, and ending with questions relating to rational points on algebraic curves (particularly genus-one curves) and their Jacobians.