

# Algebraic Geometry

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The goal of the course is to provide a fast introduction to the geometry of projective varieties, based mostly on examples. Being optimistic, the items could be organized in the following weekly distribution:

1. Introduction to projective sets: graded ring, Nullstellensatz, Hilbert polynomial, invariants.
2. Morphisms of projective sets: products, projections.
3. Parameter spaces: Grassmannians, Fano varieties, Hilbert spaces.
4. Counting degrees and dimension of classical examples.
5. Special varieties: minimal degree, secant and dual varieties, open problems.

**Text:** The spirit and most of the examples are extracted from the textbook:

J. Harris, *Algebraic Geometry: A first Course*, Graduate Texts in Mathematics, Springer 1992.

The teacher will also use his own notes, where most of the complete details are done. They are available at [www.mat.ucm.es/~arrondo/projvar.pdf](http://www.mat.ucm.es/~arrondo/projvar.pdf) (just sections 1-13).

**Prerequisites:** Only familiarity with projective geometry and the use of ideals in algebra will be required to follow the course.

**Language:** English.

**Nota per gli studenti di lingua italiana:** Anche se il corso si svolgerà interamente in inglese (salvo nell'improbabile caso che tutti gli studenti sappiano l'italiano), il ricevimento studenti e gli esami si potranno fare in lingua italiana.