27043 - Algebraic Curves

Información del Plan Docente

Academic Year   2016/17

Academic center   100 - Facultad de Ciencias

Degree   453 - Degree in Mathematics

ECTS   6.0

Course   4

Period   First semester

Subject Type   Optional

Module   ---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

The general teaching methodology designed for this class is based on the following:

- Lectures

- Problem sessions and oral presentations

- Office hours

- Students' individual work

5.2.Learning activities

Las actividades de eprendizaje serán fundamentalmente, la asistencia a las clases teóricas, la participación en las presentaciones orales y la asistencia a tutorías y el trabajo personal (estudio y realización de ejercicios).

Learning activities will consist on: lectures, oral presentations, office hours and personal work (including homework assignments).

5.3.Program

1. Algebraic Preliminaires

- Commutative rings and ideals.

- Rings of fractions.

- Polynomial rings. Homogeneous polynomials.

- Noetherian rings. The Hilbert basis theorem

2. Algebraic Varieties

- Affine algebraic sets and ideals of sets of points.

- Hilbert's nullstellensatz.

- Polynomial maps, Zariski's topology, morphisms and rational maps.

- The projective space. Projective algebraic sets.

- Varieties in a multiprojective space.

3. Algebraic Plane Curves}

- Parametrizable curves.

- Local properties: singularities, tangents and multiplicities.

- Multiplicities local rings.

- Bézout's theorem.

5.4.Planning and scheduling

Timetables, exams schedules and any other important information will be available through the Facultad de Ciencias web page.

5.5.Bibliography and recomended resources

E. BRIESKORN, H. KN\"ORRER. Plane Algebraic Curves (English edition). Springer, Basel 1986.

W. FULTON. Algebraic curves: An Introduction to Algebraic Geometry, 3rd Edition. Addison Wesley Publ. Co., Reading MA 2008.

F. KIRWAN. Complex algebraic curves. Cambridge University Press, Cambridge 1992.