UNIVERSITY OF GOTHENBURG

DEPARTMENT OF MATHEMATICAL SCIENCES

MMA320 Introduction to Algebraic Geometry, 7.5 credits

Inledning till algebraisk geometri, 7,5 högskolepoäng

Second Cycle

Confirmation

This course syllabus was confirmed by Department of Mathematical Sciences on 2017-12-01 to be valid from 2017-12-01, spring semester of 2018.

Field of education: Science 100%
Department: Department of Mathematical Sciences

Position in the educational system

The course can be part of the following programme: 1) Mathematical Sciences, Master's Programme (N2MAT)

Main field of studies	*Specialization*
Mathematics	A1F, Second cycle, has second-cycle course/s as entry requirements

Entry requirements

The equivalent of 90 credits in Mathematics, including at least 7.5 credits from the second cycle and the course *MMG500 Algebraic Structures*.

Learning outcomes

On successful completion of the course the student will be able to:

- describe and use the concept of affine and projective varieties,
- describe the group law on a cubic curve,
- define what is meant by the dimension of a variety,
- prove the existence of lines on a cubic surface and determine their configuration,
- describe the concept of tangent space and characterize smooth points,
- resolve plane curve singularities.

Course content

Affine algebraic varieties. Morphisms and rational functions. Projective varieties. The group law on cubic curves. Quasi-projective varieties. Finite maps. Dimension. Lines on a cubic surface. Tangent space. Singular points and blow-ups.

Form of teaching

Language of instruction: English

Assessment

There will be an oral or written exam at the end. During the course, there may be optional assignments that give bonus points on the exam. Examples of such assignments are small written tests, labs, and oral or written presentations. Information about this is found on the course home page.

If a student, who has failed the same examined component twice, wishes to change examiner before the next examination, a written application shall be sent to the department responsible for the course and shall be granted unless there are special reasons to the contrary (Chapter 6, Section 22 of Higher Education Ordinance).

Grades

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U).

Course evaluation

The course is evaluated with an anonymous questionnaire and/or a discussion with the student representatives. The results of and possible changes to the course will be shared with students who participated in the evaluation and students who are starting the course.

Additional information

For a list of course literature, see:
https://www.chalmers.se/sv/institutioner/math/utbildning/grundutbildning-goteborgs-universitet/kurslitteratur/Sidor/Kurslitteratur-i-matematik.aspx

The syllabus for MMA320 was originally established to take effect from 2007-07-01, when it replaced MAM650, and was revised 2010-07-01.