



Course syllabus

Faculty of Technology
Department of Mathematics

1MA113 Geometri, 7,5 högskolepoäng
Geometry, 7.5 credits

Main field of study

Mathematics

Subject Group

Mathematics

Level of classification

First Level

Progression

GIN

Date of Ratification

Approved by Faculty of Technology 2014-11-11
The course syllabus is valid from autumn semester 2015

Prerequisites

General entry requirements and Mathematics 4 (Field-specific entry requirements 9/A9).

Objectives

The student should be able to:

- describe, in a broad sense, the structure of Euclid's Elements and of axiomatic systems in general
- solve problems of geometry concerning triangles and circles
- give an account of the interplay between geometry and algebra
- know the basics of projective and hyperbolic geometry and be able to solve some problems in these areas
- derive the symmetry groups for plane figures
- give an account of the three classic geometric "unsolvable" problems
- compare different approaches to geometric problems
- give an account of the fractal concept

Content

- Measuring of lengths, areas and volumes
- Euclid's Element. Axiomatic systems
- Theorems about triangles and circles
- Constructions with ruler and compasses
- Problem solving
- Geometry and algebra – an interplay. Symmetry groups of plane figures

- Conic Sections
- Basics of projective geometry, hyperbolic geometry and fractal geometry
- Three classical "unsolvable" geometric construction problems; something about number fields.

Type of Instruction

Lectures, seminars and tutoring.

Examination

The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).

On request, students may have their credits translated to ECTS-marks. Such a request must be sent to the examiner before the grading process starts.

The examination consists of written assignments and an oral test.

Course Evaluation

A course evaluation will be carried out and compiled after the course is completed. The compilation will be presented to the current board as well as to the students and filed by the coordinating department.

Required Reading and Additional Study Material

Required Reading

Anders Tengstrand. *Åtta kapitel om geometri*. Studentlitteratur, 2005. 240 (311) pages.