Linnæus University

Course syllabus

Faculty of Technology
Department of Mathematics

1MA403 Vektorgeometri, 7,5 högskolepoäng
Vector Geometry, 7.5 credits

Main field of study
Mathematics

Subject Group
Mathematics

Level of classification
First Level

Progression
G1N

Date of Ratification
Approved by Faculty of Technology 2014-10-03
The course syllabus is valid from autumn semester 2015

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

Objectives
The student should be able to

- perform computations with matrices and vectors, and apply them to describe and interprete geometrical properties
- perform computations with scalar product, vector product and determinant, and make geometrical interpretations
- establish equations of lines and planes in parameter and normal forms, and make geometrical interpretations
- compute angles and distances between points, lines and planes
- understand the definition of linear mapping and its matrix representation, and to compute matrices for projections, reflections, rotations and other matrices of linear mappings
- determine and interpret eigenvalues and eigenvectors
- describe basic definitions, prove some basic theorems, and apply them in computations
- interpret, communicate and argue using mathematic notions.

Content
Linear equation systems, Gauss elimination, matrices, vectors, basis and change of coordinates, scalar product, vector product, determinants, lines, planes, angles, distance computations, linear mappings, matrices for linear mappings, compositions of linear

mappings, diagonalizations, some parts concerning determinants of higher order.

Type of Instruction
Lectures and seminars. Compulsory assignments may be given during the course.

Examination
The course is assessed with the grades A, B, C, D, E, Fx or F.
The grade A constitutes the highest grade on the scale and the remaining grades follow in descending order where the grade E is the lowest grade on the scale that will result in a pass. The grade F means that the student's performance is assessed as fail (i.e. received the grade F).

The student's knowledge is assessed in the form of written examinations, which involve both computation and theory questions. Furthermore, continuous assessment can be used during the course.

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.

Credit Overlap
This course cannot be part of a degree in combination with another course in which the content fully or partly correspond to the content of this course: 1MA103
Vector Geometry, 7.5 credits

Other
Grade criteria for the A–F scale are communicated to the student through a special document. The student is to be informed about the grade criteria for the course by the start of the course at the latest.

Required Reading and Additional Study Material
Required Reading
Lay, David C.,*Linear Algebra and Its Applications*, Pearson/Addison Wesley, latest edition. 792 pages.