Linnæus University

Course syllabus

Faculty Board of Science and Engineering
School of Computer Science, Physics and Mathematics

1MA103 Vektorgeometri, 7,5 högskolepoäng
Vector Geometry, 7.5 credits

Main field of study
Mathematics

Subject Group
Mathematics

Level of classification
First Level

Progression
G1F

Date of Ratification
Approved by the Board of the School of Computer Science, Physics and Mathematics 2009-08-11

Revised 2010-05-24. Revision of the literature list and course evaluation.

The course syllabus is valid from autumn semester 2010

Prerequisites
A course in basic mathematics, 7.5 hp or equivalent

Expected learning outcomes
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 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 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. The principal assessment method for the course is determined at the beginning of the course.

Course Evaluation

A course evaluation will be carried out at the end of the course in accordance with the guidelines of the University. The result of the course evaluation will be filed at the department.

Required Reading and Additional Study Material

Required Reading

Anders Tengstrand. *Linjär algebra med vektorgeometri*, Studentlitteratur, 2005 or later edition. 246 (367) pages.
or
Lay, David C. (2006), Linear Algebra and Its Applications (3rd ed. update), Pearson/Addison Wesley, ISBN 0-321-28713-4.