SF1605 Complementary Course in Linear Algebra 1.5 credits

Kompletteringskurs i linjär algebra

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

Course syllabus for SF1605 valid from Autumn 2007

Grading scale

A, B, C, D, E, FX, F

Education cycle

First cycle

Main field of study

Mathematics,Technology

Specific prerequisites

5B1108 (Linear algebra I) or equivalent.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

The general objective of the course is to be a complement for students that have taken a smaller course in Linear algebra, especially Linjär Algebra I, so that the student will achieve the same knowledge as is expected in the course Linjär algebra II, SF1604. More precisely after a course is expected that the students:

- understand the concept linear vector space and concepts like subspace, linear span, linearly independent, set of base vectors, dimension and coordinates.
- be able to decide whether a set of vectors is linearly independent and be able to find basis for vector spaces and the dimension of subspaces.
- know how to calculate the rank of a matrix and be a master of the connection between the rank and the dimension of the null space of a matrix.
- know the definition of an inner product space and be a master of the problem to decide if a product is an inner product.
- by using the Gram Schmidt method be able to find an orthogonal base in a subspace of an inner product space, and to be able to characterize orthogonal matrices.
- be a master of the use of the least square method to find optimal solutions of inconsistent linear equations.
- be a master of the use of bases of changes matrices for the description of the change of base in a vector space.
- be able to decide whether or not a map between vector spaces is a linear map and be a master of the determination of the matrix of a linear map.
- be a master of the use of the mathematical induction to solve simple mathematical problems devoted for induction.

Course contents

Course literature

Anton/Rorres: Elementary Linear Algebra with Applications. 9:th ed.

Tomas Ekholm: Kompletteringskompendium.

Examination

- TEN1 - Examination, 1.5 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

Other requirements for final grade

Written or oral exam (TEN1; 1,5 university credits).

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.