Linnæus University

Course syllabus

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

1MA151 Linjär algebra och Fourierserier, 7,5 högskolepoäng
Linear algebra and Fourier series, 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 2012-08-17. Prerequisites are revised.

The course syllabus is valid from spring semester 2013

Prerequisites
1MA153 Vector analysis 7.5 credits, and 1MA102 Calculus I 7.5 credits or equivalent.

Objectives
After completing the course, the student should be able to

- describe the concepts of linear spaces and Euclidean spaces
- determine the kernel and rank of matrices
- formulate the Spectral Theorem, and apply it to solve linear systems of recurrence or differential equations
- understand and making estimates for sequences and function series concerning pointwise and uniform convergence
- determine the Fourier series for periodic functions
- interpret, communicate and argue using mathematical notions

Content
Linear spaces, Euclidean spaces, spectral theorem for finite matrices, function series, pointwise and uniform convergence, Fourier series, Parseval's formula.

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 oral and/or written examinations which involve both computation and theory questions. The principal assessment method for the course is determined at the beginning of the course.

Course Evaluation

After the course a written evaluation of the course will take place according to the University guidelines.

Required Reading and Additional Study Material

H. Anton,*Elementary Linear Algebra*, John Wiley and Sons Ltd, 2005 or later. 346 (606) pages.

Supplementary reading
A. Tengstrand, *Linjär algebra med vektorgeometri*, Studentlitteratur, 2005 or later.