Linnæus University

Course syllabus

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

4MA221 Multivariatanalys, 7,5 högskolepoäng
Multivariate Analysis, 7.5 credits

Main field of study
Mathematics

Subject Group
Mathematics

Level of classification
Second Level

Progression
A1N

Date of Ratification
Approved by Organisational Committee 2009-08-11

The course syllabus is valid from spring semester 2010

Prerequisites
In mathematics: Linear algebra (1MA151), 7.5 Higher Education Credits or equivalent. In mathematical statistics: Probability theory and statistics (1MA201), 7.5 Higher Education Credits, and Linear statistical models (1MA203), 7.5 Higher Education Credits or equivalent.

Expected learning outcomes
The student shall be able to

- account for general approaches to analyze multi-dimensional data by statistical methods
- compute means and covariances of linear combinations of random variables by matrix operations
- account for multidimensional normal distribution
- carry out inference for mean vectors applied to real data
- account for and apply multivariate regression, principal component analysis, factor analysis, discriminant analysis, and cluster methods, to real data

Content
The course contents is

- computation of means and covarianses of linear combinations of random variables by matrix operations
- multi-dimensional normal distribution

- inference of mean vectors
- multivariate regression
- principal component analysis
- factor analysis
- discriminant analysis
- cluster methods

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.

Lectures and seminars. Compulsory assignments may be given during 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
Required reading
Johnson R A, Wichern D W. *Applied multivariate statistical analysis*, Prentice Hall, 2002.
453 (767) pages.