Linnæus University

Course syllabus

Faculty of Technology
Department of Mathematics

1MA503 Linjära statistiska modeller, 7,5 högskolepoäng
Linear Statistical Models, 7.5 credits

Main field of study
Mathematics

Subject Group
Mathematics

Level of classification
First Level

Progression
G1F

Date of Ratification
Approved by Faculty of Technology 2015-11-03
The course syllabus is valid from spring semester 2016

Prerequisites
The course 1MA201 Probability Theory, 7.5 hec or the equivalent.

Objectives
The student shall be able to:

- Understand and describe the basic linear models in statistics
- Apply the results in order to perform statistical computations
- Recall the definitions of basic notions, be able to relate them, and to use the connections in order to solve statistical problems
- Interpret, communicate and lead an argument in statistical settings, in particular solve assessment problems in small groups and present them to an auditorium
- Recall the assumptions and distributions for the various regression models, apply them to real data and interpret the results
- Check whether the chosen regression parameters are reasonable
- Explain the relationship between simple linear regression and the analysis of correlations
- Recall the assumptions and distributions for the used for ANOVA, apply them to real data and interpret the results.

Content
The course contains:

- estimation and inference for multivariate data
- correlation analysis
- simple and multi linear regression

- one-and multisided analysis of variance
- counting partitions
- non parametric models

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 form of
1. oral exam (3 hp), grades A to F
2. graded assignment (2 hp), grades A to F
3. written report of a project (1 hp) , grading scale AF
4. oral presentation of a project (1 hp) , grading scale AF
5. opposition of another student's project (0.5 hp), grading scale UG

Course Evaluation
During the course or in close connection to the course, a course evaluation is to be carried out. The result and analysis of the course evaluation are to be communicated to the students who have taken the course and to the students who are to participate in the course the next time it is offered. The course evaluation is carried out anonymously. The compiled report will be filed at the Faculty.

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: 1MA203 Linear Statistical Models, 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
Milton, J S & och Jesse, C. A. *Introduction to Probability and Statistics: Principles and Applications for Engineering and the Computing Sciences*, McGraw Hill, 2004. pp. 378-569 (798)