

# Multivariate Analysis for the Social Sciences

## Multivariata analyser

**Credit points:** 7,5 hp

**Responsible department:** Umeå School of Business and Economics, dept. of Statistics

**Subject:** Statistics

**Level:** PhD level

**Grading scale:** Fail - Pass

**Subject area:** Social Sciences

### Confirmation

The course syllabus is established by the dean of the Faculty of Social Sciences' on 2014-03-10. The course syllabus is valid from 2014-03-10

### Purpose and Contents

Multivariate analysis is a generic term for different statistical methods that analyze relations between several independent variables and more than one dependent variable. The strength in these methods of analysis is that they make it possible to analyze and structure research generated data with complex relations between more than one dependent variable and several independent variables. These methods can also be used as a complement to, or replace, univariate analyses, for example regression analyses.

During this course the multivariate techniques are introduced and discussed; multivariate models of covariance and variance, discriminant analysis, factor analysis, and analyses of structural equation models. The common feature of these techniques of analysis is that they build on linear models for relations between the dependent and independent variables. The starting point is the same as with the regression analysis, that is, to analyze how variations in a dependent variable can be explained by the variation in the other variables.

The course is defined by its interplay between theory and practice, that is, between teaching in the theoretical perspective and then applying this knowledge on an actual data material. These data materials will be supplied within the course, but in addition space will be given to work with own data material.

### Expected learning outcomes

After the course the students will:

- have acquired knowledge about multivariate analysis techniques, both about when these techniques are suitable and how they can be used.
- have acquired familiarity with the handling of the statistical software in relation to different techniques for multivariate analyses through applications on concrete data materials.

### Required knowledge

Required prior knowledge is basic knowledge in statistics and regression analysis corresponding to the basic course in statistics (7.5 hp) available at the faculty of social sciences.

**Form of instruction**

The course builds on the expectation that the students actively work with the literature and prepare and participate in the regular lectures and computer based lectures.

**Examination modes**

The examination will be conducted through verbal and written account, individually or in group. The students will be granted one of two grades; pass or fail.

**Course literature**

Tabachnick, Barbara G. and Linda, S. Fidell. *Using Multivariate Statistics*,  
**Latest edition.** Allyn & Bacon.