

## Quantitative Methods of Analysis, 7.5 credits

### *Kvantitativa analysmetoder, 7,5 hp*

<b>Course Code/Codes</b>	35PS066
<b>Subject Area</b>	Psychology. An overarching course for faculty of Humanities and Social Sciences.
<b>School/equivalent</b>	School of Law, Psychology and Social work
<b>Valid from</b>	2022-01-01
<b>Approved</b>	2018-12-04
<b>Revised</b>	2021-12-13
<b>Approved by</b>	Head of School
<b>Translation to English, date and signature</b>	2018-11-26 Written in English, translated to Swedish.

## 1 Course content

The course has been designed to provide an advanced level overview of the fundamental statistical methods used within the disciplines of the social sciences.

The course aims to develop an advanced understanding of the principles of statistical methods in social sciences, the idea of testing hypotheses with statistical methods, understanding of the characteristics of quantitative data, data preparation for statistical analyses, understanding conceptual basis and practical applications of inferential statistics.

Students are provided examples based on datasets collected using experimental, cross-sectional and longitudinal research designs. Students also have the opportunity to practice the various statistical methods covered in the course using real datasets.

The course covers the following topics:

- Fundamental statistical concepts
- Analysis of variance and covariance
- Regression models
- Factor analysis and testing psychometric properties of measures
- Testing mediating mechanisms using regression models
- Testing conditional effects (moderation) and conditional indirect effects

Overall, the course shall provide students with an understanding of the fundamental statistical methods of quantitative data analysis.

## 2 Outcomes

## **2.1 The course in relation to the doctoral programme**

The course shall primarily refer to the following intended learning outcomes for third-cycle courses and study programmes as described in the Higher Education Ordinance, i.e. the doctoral student shall demonstrate:

### *Knowledge and understanding*

- familiarity with research methodology in general (part of outcome 2)
- familiarity with the methods of the specific field of research in particular (part of outcome 2)

### *Competence and skills*

- the capacity for scholarly analysis and synthesis (part of outcome 3)
- the ability to identify and formulate issues with scholarly precision critically, autonomously and creatively (part of outcome 4)
- the ability to plan and use appropriate methods to undertake research and other qualified tasks within predetermined time frames (part of outcome 4)
- the ability to review and evaluate research and other qualified tasks (part of outcome 4)

### *Judgement and approach*

- intellectual autonomy and disciplinary rectitude (part of outcome 9)

The intended learning outcomes are listed in the same order as in the general syllabus for the programme.

## **2.2 Intended course learning outcomes**

To obtain a passing grade, the doctoral student shall demonstrate:

- the ability to identify and formulate scientific questions, critically and autonomously, which can be tested statistically
- an understanding of advanced quantitative methods, their strengths and limitations
- a understanding of statistical theory and analysis methods
- the ability to perform their own statistical analyses in research
- the ability to apply different univariate statistical methods on the same research problem
- knowledge of using SPSS to perform statistical analyses
- knowledge and understanding of fundamental assumptions in statistical inference
- knowledge of the way in which different statistical analyses are interconnected, and are variants of the same statistical approach
- the ability to apply relevant statistical methods for analyses of their own data
- ability to interpret statistical analysis results and report the findings

## **3 Reading list and other teaching material**

The following course readings and teaching material will be used on the course:

Compulsory reading:

Warner, Rebecca, M. (2020). Applied Statistics II: Multivariable and Multivariate Techniques (International student edition Third Edition). Sage Publications.

Further readings may be added.

## **4 Teaching formats**

Teaching on the course takes the following format:

The course content will be delivered via lectures, seminars, and computer exercises. Students are expected to complete a pre-seminar, a number of seminar assignments and present their work as part of the course.

## **5 Examination**

The course is assessed through an examination in the format of

Take-home exam

Seminar assignments

*For examinations consisting of several examination components, the following applies:* If during the course it is concluded that a doctoral student is unable to complete a certain examination component, the examiner may set a substitute assignment provided that circumstances do not reasonably allow for the course component to be completed at a later date during the run of the course.

## **6 Grades**

Examinations on third-cycle courses and study programmes are to be assessed according to a two-grade scale with either of the grades 'fail' or 'pass' (local regulations).

The grade shall be determined by a teacher specifically nominated by the higher education institution (the examiner) (Higher Education Ordinance).

To obtain a passing grade on examinations included in the course, the doctoral student is required to demonstrate that he/she attains the intended course learning outcomes as described in section 2.2. Alternatively, if the course consists of multiple examinations generating credit, the doctoral student is required to demonstrate that he/she attains the outcomes that the examination in question refers to in accordance with section 5.

A student who has failed an examination is entitled to a retake.

If an examination consists of several examination components, and a student fails an examination component, the examiner may, as an alternative to a retake, set a make-up assignment with regard to the examination component in question.

A doctoral student who has failed an examination twice for a specific course or course element is entitled, upon his/her request, to have another examiner appointed to determine the grade.

## **7 Admission to the course**

### **7.1 Admission requirements**

To gain access to the course and complete the examinations included in the course, the applicant must be admitted to a doctoral programme at Örebro University.

Alternatively, the applicant must be admitted to a doctoral program at another equivalent higher education institution.

## 7.2 Selection

Selection between applicants who have been admitted to doctoral programmes at Örebro University and who otherwise meet the admission requirements as listed above is made according to the following order of precedence:

Priority will be given to those to applicants from disciplines within the HS faculty in the first place, from other faculties within Örebro University in the second place and from doctoral students from nearby universities (Karlstad University, Mälardalen University and Linköping University) in the third place. Thereafter students from other universities, subject to availability.

If no other selection criteria are specified in this section, priority shall be given to applicants with a lower number of course credits left before the award of their degree over applicants with a higher number of remaining course credits. Should two or more students have equal number of credits, selection will be done through the drawing of lots. This also applies within any selection groups listed unless otherwise stated.

## 7.3 Other applicants than doctoral students admitted at Örebro University

Other applicants than doctoral students admitted at Örebro University may be given access to the course on the grounds of provisions for and/or agreements regarding contracted courses, joint degrees, national graduate schools or cooperation in other respects with other universities.

Any decisions on what such other applicants may be given access to the course are made separately and on the basis of the provisions and/or agreements that occasion the student to apply for the course.

For participation in the course in other respects, the same provisions shall apply as for doctoral students admitted to Örebro University.

## 8 Transfer of credits for courses, study programmes and other experience

Provisions on the transfer of credits can be found in the Higher Education Ordinance and on the university's webpage.

## 9 Other information

The language of instruction is English.

## Transitional provisions

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