DEPARTMENT OF EDUCATION AND SPECIAL EDUCATION

QRM1800   Basic statistics for educational research, 7.5 credits

Grundläggande statistik för utbildningsvetenskaplig forskning, 7,5 högskolepoäng

Third-cycle level / Forskarnivå

Confirmation

This syllabus was confirmed by the Department of Education and Special Education on 2018-06-20, and was last revised on 2023-09-26. The revised course syllabus is valid from Spring semester 2024.

Responsible Department

Department of Education and Special Education, Faculty of Education

Entry requirements

For admission to the course, the applicant has to be registered as a doctoral student in the third cycle or have a doctoral degree

Learning outcomes

The course is intended to provide an introduction to and overview of basic statistical concepts and their application in quantitative educational research. The overall aim is to give participants an understanding of how basic statistics can be used in educational research contexts, and to make participants appreciate the value of statistics in relation to educational research questions. The course has an applied focus, and participants are expected to learn how to perform basic statistical analyses and how to interpret and present results. In line with these aims, after successful completion of the course the student should be able to do the following:

Knowledge and understanding

On successful completion of the course, the participant is expected to be able to:

- describe and explain the following basic statistical concepts and procedures: measurement, central tendency and dispersion, symmetry, measures of bivariate association between variables, and simple regression;
- describe the purpose and principles of descriptive and inferential statistics, respectively.

Competence and skills

On successful completion of the course, the participant is expected to be able to:

- handle the statistical program SPSS in terms of organization and processing of data, be able to present data in the form of charts and tables;
- perform descriptive analyses of data and present them in graphical as well as statistical form;
- perform significance tests of mean differences and measures of association and present results in a statistically correct manner;
- perform and present findings from correlation analysis and simple linear regression;
- document the management and analyses of data in the form of syntax in SPSS.

Judgement and approach

On successful completion of the course, the participant is expected to be able to:

- demonstrate an insight into how choice of statistical method is related to type of data and research question;
- analyze and discuss methodological and technical advantages and limitations associated with research strategies that are based on statistical methods and their applications in the educational sciences.

Course content

The course will cover basic statistics and how these statistics can be understood and used in researching educational science questions. The contents of the course aim at giving the students an understanding of descriptive vs inferential statistics, univariate and bivariate analysis, data management and analysis in the statistics program SPSS, and the importance of using statistical methods appropriate for the research question and the data at hand. The contents of the course therefore include topics such as data levels of measurement and scales, sampling and measurement procedures, parametric vs non-parametric statistics, and tests of significance. Further, the course covers descriptive statistics in terms of measures of central tendency and dispersion, univariate/bivariate analysis and measures of association in terms of correlation and regression. The course puts much emphasis on application, and each lecture will be accompanied by hands-on practice in performing statistical analyses, interpretation and presentation of results.

Types of instruction

The course starts with two and half days of on-campus lectures and hands-on training in applying statistical analyses on educational data with the statistics software SPSS. After the on-campus meeting, the course continues as an on-line course, with lectures, assignments and seminars over the internet. (GU's learning platform).

Course participants are further expected to work independently and take responsibility for their own learning by reading the course literature, performing practical exercises and complete the tasks that are assigned by the course leader.

Language of instruction

The course is given in English.

Language of instruction is English, unless all participants and teachers agree on Swedish.

Grades

The grade Pass (G) or Fail (U) is given in this course.

Types of assessment

The course is examined by various theoretical and practical assignments continuously during the course, and a final written report, in which statistical analyses is applied to educational data and the interpretation of the results are presented. A pass grade requires active participation in seminars and workshops, and attendance in all mandatory tasks.

Course evaluation

Course evaluation will be carried out after the course. Course evaluations will be summarized and made available to doctoral students. The evaluation can be used as a guide the future development and planning of the course.

Other information

This is a third-cycle course and a basic course within the national school of Quantitative Research Methods in education (QRM) for researchers. More information about QRM is available at **www.qrm.gu.se**.

Collaborating departments

Department of Education and Special Education, University of Gothenburg in collaboration with Department of Applied Educational Science, Umeå University.

Technical equipment and more

In order to participate in the course, access to own computer / laptop is needed together with computer accessories for online communication (camera, headphones, mic) and the required statistical software (see list of literature).

The number of participants is limited to 15. Priority will be given to doctoral students within the Educational sciences if the number of applicants for the course is exceeding the number of places.