



DEPARTMENT OF EDUCATION AND SPECIAL EDUCATION

PDA186 Design, Measurement and Analysis in Educational Research, 15 credits

Design, mätning och analys i utbildningsvetenskaplig forskning, 15 högskolepoäng
Second Cycle

Confirmation

This course syllabus was confirmed by Department of Education and Special Education on 2018-12-03 and was last revised on 2020-12-01 to be valid from 2021-01-18, spring semester of 2021.

Field of education: Social Sciences 100%

Department: Department of Education and Special Education

Position in the educational system

The course can be part of the following programme: 1) International Master's Programme in Educational Research (L2EUR)

Main field of studies

Education with Specialization in Educational Research

Specialization

A1F, Second cycle, has second-cycle course/s as entry requirements

Entry requirements

PDA085, Introduction to International Master in Educational Research, 15 credits or equivalent knowledge.

Learning outcomes

After successful completion of the course the student will be able to:

Knowledge and understanding

1. Explain key terms and concepts in philosophy of quantitative research in education.
2. Describe key characteristics of experimental, quasi-experimental and non-experimental designs.

3. Describe and explain methods of analysis suited for different designs.
4. Describe what is contained in the notion of validity of causal inference, including its most common sub-categories and threats to valid causal inference.
5. Describe what is contained in the notions of validity and reliability of educational measurement, including threats to valid and reliable measurement.
6. Describe relations between scales of measurement and choice of appropriate methods for statistical analysis.
7. Describe and explain the basic statistical concepts and procedures, such as, measurement level, central tendency and dispersion, normal distribution, hypothesis testing, statistical significance, bivariate association between variables, linear regression and effect size.

Competence and skills

1. Discuss possibilities and limitations of quantitative methods within educational contexts.
2. Critically discuss scientific projects and articles with respect to their:
 1. Research design and methods, using appropriate terminology and conceptual tools.
 2. Measurement procedures and methods, using appropriate terminology and conceptual tools.
3. 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.
4. Perform significance tests of different hypotheses, conduct correlational and causal analyses and present results in a statistically correct manner.

Judgement and approach

1. Evaluate the relevance of different design, measurement and analytical approaches in relation to research questions, data and scientific claims.
2. Reflect on questions of research ethics and related decisions.
3. Analyse 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 covers how quantitative methods may be used in studying research questions in educational science. Points of departure in the course are quantitative research designs, measures, and analyses as applied in educational research. Validity, reliability, and generalizability are central quality criteria that should be observed in all phases of the research process, as are considerations pertaining to research ethics. The focus lies partly on the internal logic of quantitative methods in relation to pedagogical

and social scientific research questions, and partly on key scientific concepts and quantitative research terminology. Yet another focus is to apply suitable statistical analyses to test hypothesis and answer research questions. During the course, students discuss methodological issues, such as choice of design and required sample sizes, and steps that can or should be taken for analyses and conclusions to be valid. Throughout the course, participants acquire not only an overview and conceptual understanding but also applications of basic statistics in quantitative research methodology. This understanding will be elaborated on and discussed in relation to concrete examples of research.

The course is divided into three subsections. The first course section covers Research Design in Quantitative Research of Education. The second course section will cover Measurement in Quantitative Research of Education, and the third course section will cover Statistical Analysis in Quantitative Research of Education. A graded assignment will be given separately for each of the three course sections.

Form of teaching

The course is given in English and on campus. It is taught in a combination of lectures and workshops.

Language of instruction: English

Assessment

Performance is assessed through:

1. A written report for each of the three subsections of the course;
2. Participation in and group presentation of learning and experience within all course sections.

The course involves three graded assessments of each 5 credits.

A student who has taken two exams in a course or part of a course without obtaining a pass grade is entitled to the nomination of another examiner. The student needs to contact the department for a new examiner, preferably in writing, and this should be approved by the department unless there are special reasons to the contrary (Chapter 6 Section 22 of the Higher Education Ordinance).

If a student has received a recommendation from the University of Gothenburg for special educational support, where it is compatible with the learning outcomes of the course and provided that no unreasonable resources are required, the examiner may decide to allow the student to sit an adjusted exam or alternative form of assessment.

In the event that a course has ceased or undergone major changes, students are to be guaranteed at least three examination sessions (including the ordinary examination

session) over a period of at least one year, but no more than two years, after the course has ceased/been changed.

Grades

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U).

In order to pass the course, a student has to pass all three course sections. For a Pass with Distinction (VG) students must complete at least two course parts with a VG.

Course evaluation

Course evaluation is integral part of the course. Course participants will be invited to evaluate the course via a short online or paper questionnaire. Course evaluations are anonymous. The results will be communicated to the students and will function as a guide for further development of the course.

Additional information

The course uses the University of Gothenburg's management learning system for different forms of digital communication. Access to a computer and the Internet is therefore required.