Quantitative Research Methods   (K001131)

Course size   (nominal values; actual values may depend on programme)

Credits 6.0	Study time 180 h	Contact hrs	45.0 h

Course offerings in academic year 2018-2019

A (semester 1)   English

Lecturers in academic year 2018-2019

Demanet, Jannick	PS04	lecturer-in-charge

Offered in the following programmes in 2018-2019	crdts	offering
Bachelor of Science in Social Sciences (main subject Communication Studies)	6	A
Bachelor of Science in Social Sciences (main subject Political Sciences)	6	A
Bachelor of Science in Social Sciences (main subject Sociology)	6	A
Joint Section Bachelor of Science in Social Sciences	6	A

Teaching languages

English

Keywords

Position of the course

Contents

This course has two main objectives. First, it gives an introduction to the analysis of variance (one-way ANOVA) and the multiple linear regression model. Building further on the knowledge and insights acquired in the educational component 'Statistics for the Social Sciences' (1BA), the course addresses the basics of statistical control and multiple analysis. More specifically, we will see the following techniques: t-test for the difference between two means, ANOVA, bivariate regression (basics, residuals and influence statistics, inferential statistics), multiple regression (basics, redundancy/suppression, inferential statistics and assumptions, categorical independent variables, F-tests, and interaction effects).
The second objective concerns the analysis of large and complex datasets in a correct and sound manner. Students learn the basic techniques for data transformations and statistical analyses in the statistical analysis software package SPSS, both by way of the menu interface and syntax commands, under supervision of an assistant. To this purpose, we will use real datasets, taking research questions embedded in social scientific theory as our point of departure.
The aimed competences of this course are threefold. First, it aims to learn students to choose the appropriate statistical technique for specific research questions. Second, students are learned to carry out the chosen technique adequately. Third, students are learned to interpret the results of their analyses aptly. In the coming years, students can build further on the knowledge, insights and skills they have acquired here, in view of learning more advanced statistical techniques and models. For the Bachelor of Science in the Social Sciences program this is taken up by the courses 'Multivariate data analysis' and 'Generalized linear techniques' (3BA).

Initial competences

-        Prerequisite is passing Statistics in the Social Sciences (Pieter-Paul Verhaeghe, VUB) or to have acquired the knowledge, skills and insights targeted in this component in another way

Final competences

For the covered statistical techniques, the course expects students upon completion:
-       to have insight into the possibilities and limitations of quantitative techniques of analysis for social sciences research;
-       to understand published statistical analyses, to be able to correctly interpret, and critically evaluate, them;
-       to be able to make a sound choice from different statistical techniques to answer a research question in a scientifically sound manner;
-       to be able to correctly calculate and interpret statistical measures;
-       to understand the advantages and limitations of the different statistical measures;
-       to be able to independently translate a research question in a statistical model;
-       to be able to analyze a statistical model in SPSS;
-       to be able to independently carry out the necessary data transformations in SPSS;
-       to have become a critical and legitimate user of statistics (life-long learning)
-       to be able to adjust the personal learning process.
More generally, the course addresses the following program learning objectives:
-       LO6: can formulate a valid scientific research question on a topic that relates to the social sciences.
-       LO8: knows how to set up a scientific and methodologically correct research design.
-       LO9: possesses the methodological knowledge and skills of data selection and data processing that prevail within the domains of the social sciences.
-       LO10: masters the techniques of good and accurate research reporting in oral and written form.
-       LO11: has an investigative, problem-oriented and critical attitude towards social, political and media-related phenomena and scientific research results with regard thereof.
-       LO14: acts in a professional and responsible manner.
-       LO15: is able to perform teamwork, he or she possesses good communicative skills and is solution-oriented.
-       LO16: prioritizes scientific integrity and honesty in his or her scientific research activities.

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

Access to this course unit via an exam contract is unrestricted

Teaching methods

Lecture, seminar, seminar: practical PC room classes

Extra information on the teaching methods

Didactic forms
-       Lectures and interactive lectures with class discussions, peer-to-peer learning;
-       E-learning
-       Guided PC exercises
Study load
HOC: 39 h (13 x 3 h)
WPO: 39 h (13 x 3 h): Computer-assisted education: individual applications, exercises, and assignments in computer classes, under supervision of an assistant (36 h (12 x 3))
ZELF: 102 h
o   Revising theoretical subject matter before and after classes (33 h)
o   Preparing/revising statistical exercises (36 h)
o   Preparing for the exam (36 h)

Learning materials and price

Reader:
Mclendon, M.J. (1998). Multiple regression and causal analysis. *Itasca, Ill.:* Peacock Publishers (selected chapters)
+ other chapters to be communicated at the start of this course
+ slides of theoretical lectures and practice sessions

References

Course content-related study coaching

Evaluation methods

end-of-term evaluation

Examination methods in case of periodic evaluation during the first examination period

Written examination

Examination methods in case of periodic evaluation during the second examination period

Written examination

Examination methods in case of permanent evaluation

Possibilities of retake in case of permanent evaluation

not applicable

Extra information on the examination methods

Formative assessment
-        Interactive lectures with group discussion, peer-to-peer learning, and application of theoretical subject matter to everyday examples;
-        Practical exercise sessions under supervision of an assistant. By preparing and revising exercises, students can monitor their progress with the subject matter. The exercises will be accompanied by feedback. Synthesis exercises appear twice throughout the year, which give students a good insight into their mastery of the subject matter.

Summative assessment
The written exam is composed of two parts. The first part is paper-and-pencil, and involves both theoretical and practical questions. For the second part, students will solve practical questions with the help of computer software, including SPSS. This exam targets insight in rather than reproduction of the subject matter. Both parts count for 50% of the total grade, which is calculated by summing both partial scores. It is not possible to pass one part if the total score of the exam is below 50%.

Calculation of the examination mark

Written exam, which comprises 100 % of the final grade.