GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2016-2017

Applied Statistics (K001209)

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

Credits	10.0	Study time	300 h
Contact hrs	70.0 h		

Course offerings and teaching methods in academic year 2018-2019

A (semester 1)	Dutch	lecture	35.0 h
		seminar: practical PC room classes	25.0 h
		guided self-study	5.0 h
		seminar: coached exercises	5.0 h

Lecturers in academic year 2018-2019

Demanet, Jannick	PS04	lecturer-in-charge
Lievens, John	PS04	co-lecturer

Offered in the following programmes in 2018-2019	crdts	offering
Linking Course Master of Science in Sociology	10	A
Preparatory Course Master of Science in Sociology	10	A

Teaching languages

Dutch

Keywords

Statistics in the social sciences, applied statistics, quantitative methods, descriptive statistics, inductive (inferential) statistics, data-analysis, multiple linear regression analysis, analysis of variance, multivariate analysis, SPSS

Position of the course

The main objective of this course is to train students to become informed and critical users of simple statistical techniques. This course has three objectives. First, we cover the basic principles of statistics for the social sciences. Descriptive statistics offers tools to synthesize large quantities of information in a systematic and scientifically sound manner. Inductive statistics provide the method to draw conclusions about an entire population out of data acquired from a (correctly drawn) sample. Second, the course gives an introduction to the multiple linear regression model and the analysis of variance. The basics of statistical controls and multivariate analysis are covered. The third aim 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. To this purpose, we will use real datasets, taking research questions embedded in sociological theory as our point of departure.
The aimed competences of this component are threefold. First, it aims to learn students to choose the appropriate statistical technique for specific research questions. Second, students can carry out the chosen technique adequately. Third, students learn 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, for learning more advanced statistical techniques and models. For the degree program of Sociology this is, more specifically in the course ‘Multivariate analysis’.

Contents

Introduction
-Measuring, statistical units, variables, measurement levels, data matrix
Descriptive statistics
- Description of univariate distributions: frequency distributions, graphical representations, measures for centrality, dispersion and form

- Theoretical distributions, normal distribution
- Description of the association between two variables, bivariate statistics: crosstabulation, scatterplots, measures of association, correlation and regression analysis
- statistical control: relationships between more than two variables

Inferential statistics
- theoretical distributions: normal distribution
- Sample variability, sampling distribution
- Confidence intervals and significance tests for counts, proportions, means and theassociation between two variables

Multiple regression analysis
- basic multiple linear regression model
- data assumptions
- extensions of the linear regression model: non-metrical independent variables, interaction effects

Analysis of variance
- t-test
- the one-way analysis of variance (ANOVA) model

SPSS
- initiation to spss: basic principles, data transformation and statistical analyses by way of the menu interface and syntax commands

Initial competences

Recommended
Learning outcomes secondary education. Four hours of maths in the final years of secondary education provides a sufficient starting level. A website with the required prior knowledge of mathematics is available enabling students with insufficient mathematical skills to update their knowledge.

Final competences

1. 1. To have insight in the possibilities and limitations of quantitative analyses for social-scientific research
2. 2. To understand and to be able to correctly interpret and critically assess published statistical analyses.
3. 3. To be able to make a well-considered choice from the different statistical techniques in order to answer a scientific research question in a solid, sound manner.
4. 4. To be able to correctly calculate and interpret statistical measures.
5. 5. To recognize the advantages and the limitations of the different statistical measures and techniques
6. 6. To be able to make a sound choice from different statistical techniques to answer a research question in a scientifically sound manner
7. 7. To be able to analyze a statistical model independently in SPSS
8. 8. To be able to independently carry out the necessary data transformations in SPSS
9. 9. To become a critical and responsible user of statistics (life-long learning)
10. 10. To be able to adjust the personal learning process

Conditions for credit contract

Access to this course unit via a credit contract is unrestricted: the student takes into consideration the conditions mentioned in 'Starting Competences'

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Guided self-study, lecture, seminar: coached exercises, seminar: practical PC room classes

Learning materials and price

Reader + exercise sheets
Estimated cost: 30 euro

References

Course content-related study coaching

- e-learning through Minerva: FAQ, interactive exercises, interactive demonstrations, examples of exams, prior knowledge of mathematics
- individual guidance during office hours
- support from the Faculty's Tutoring Service (Monitoraat)

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

Emphasis lies on insight- and application-focused questions

Calculation of the examination mark

Periodic evaluation (100%)

Facilities for Working Students

1. Possible rescheduling of the examination to a different time.
2. Alternative time for feedback is possible