Faculty of Social Sciences

SIMM61, Quantitative Data Analysis in R, 15 credits

Kvantitativ dataanalys i R, 15 högskolepoäng

Second Cycle / Avancerad nivå

Details of approval

The syllabus was approved by Graduate School Board on 2021-02-25 to be valid from 2021-08-30, autumn semester 2021.

General Information

The course is offered as an interdisciplinary single subject course in Social Sciences at the second-cycle level, as a mandatory course within the Master Programme in Social Scientific Data Analysis and as an optional course within the Master Programmes in Global Studies, Development Studies and Social Studies of Gender.

Language of instruction: English

Main field of studies	*Depth of study relative to the degree requirements*
Social Anthropology	A1N, Second cycle, has only first-cycle course/s as entry requirements
Social Work	A1N, Second cycle, has only first-cycle course/s as entry requirements
Sociology of Law	A1N, Second cycle, has only first-cycle course/s as entry requirements
Sociology	A1N, Second cycle, has only first-cycle course/s as entry requirements
Human Geography	A1N, Second cycle, has only first-cycle course/s as entry requirements
Political Science	A1N, Second cycle, has only first-cycle course/s as entry requirements
Development Studies	A1N, Second cycle, has only first-cycle course/s as entry requirements
Gender Studies	A1N, Second cycle, has only first-cycle course/s as entry requirements

Learning outcomes

Upon completion of the course, the student shall be able to:

Knowledge and understanding

- demonstrate an understanding of concepts and principles associated with quantitative methods;
- demonstrate an understanding of the role of quantitative methods in the social sciences;
- demonstrate knowledge of multivariate statistical techniques frequently used within the social sciences;
- demonstrate an understanding of the kinds of research questions that each technique can be used to address;
- demonstrate knowledge on how to conduct applied quantitative analysis in relation to social scientific theories on a particular theme.

Competence and skills

- independently and with proficiency, be able to formulate and examine a hypothesis relevant for quantitative forms of analysis;
- independently and with proficiency, be able to operationalise theoretical concepts at different levels of analysis for quantitative analysis;
- independently and with proficiency, select an appropriate method, interpret the outcome and report the results for a given research question;
- exemplify skills in performing an analysis using the different techniques covered in the course, including but not limited to simple, multiple and multilevel linear regression, and logistic regression;
- independently and with proficiency, demonstrate a working knowledge of the R programming language.

Judgement and approach

- understand and reflect on texts (reports or scientific papers) where the argument is based on statistical analysis in a knowledgeable, independent and theoretically informed way;
- critically and independently reflect on theoretical and methodological aspects of such analysis;
- be able to independently and critically reflect on the relationship between research questions and statistical techniques;
- be able to independently and critically reflect on, and make informed decisions with regard to, core methodological issues in the context of the application of the statistical techniques taught in the course.

Course content

The aim of this course is for the student to develop an understanding of key concepts and principles guiding the use of quantitative methods, relate the use of quantitative methods to social science theory building and assessment, acquire practical skills with regard to the performance of statistical analysis and visualisation in R, and develop the ability to independently and critically assess quantitative research.

The student formulates a research question that includes a hypothesised relationship in relation to social scientific theories on a particular theme, and that can be

addressed using an available dataset. During the course different techniques for processing, visualising and analysing data in R will be introduced and the student works on answering their own research question using the tools presented to them in the lectures, seminars and computer labs. The student also learns to assimilate and evaluate existing quantitative social science research as it is presented in scientific journals and/or reports.

Moreover, some of the multivariate statistical techniques most commonly used within the social sciences are presented and practiced in R. The focus lies on the relationship between research questions and different multivariate statistical techniques. The teaching includes theory and practice in analytical methods.

Course design

The teaching consists of lectures, seminars, and teacher-assisted exercises in practical statistical analysis. The course is teaching intensive and requires a high degree of participation.

Unless there are valid reasons to the contrary, compulsory participation is required in seminars. Students who have been unable to participate due to circumstances such as accidents or sudden illness will be offered the opportunity to compensate for or re-take compulsory components. This also applies to students who have been absent because of duties as an elected student representative.

Assessment

The assessment of the course is based on an individual paper (7.5 credits) that includes a literature review in relation to social scientific theories on a particular theme and an applied analysis in R. In addition, multivariate statistical techniques are examined separately in lab reports (7.5 credits). The concepts on which the lab reports are based are introduced in conjunction with the respective lecture.

The course includes opportunities for assessment at a first examination, a re-sit close to the first examination and a second re-sit for courses that have ended during that school year. Two further re-examinations on the same course content are offered within a year of the end of the course. After this, further reexamination opportunities are offered but in accordance with the current course syllabus.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Subcourses that are part of this course can be found in an appendix at the end of this document.

Grades

Marking scale: Fail, E, D, C, B, A.
The grade for a non-passing result is Fail. The student's performance is assessed with reference to the learning outcomes of the course. For the grade of E the student must show acceptable results. For the grade of D the student must show satisfactory

results. For the grade of C the student must show good results. For the grade of B the student must show very good results. For the grade of A the student must show excellent results. For the grade of Fail the student must have shown unacceptable results.

The overall course grade consists of the average grade of the individual paper – which will account for 50% of the course grade – and the lab reports. For a grade of Pass on the entire course, the student must have been awarded at least E on all assessments for which the grading scale A–E+Fail applies.

At the start of the course, students are informed about the learning outcomes stated in the syllabus and about the grading scale and how it is applied on the course.

Entry requirements

To be eligible for the course, the student must have at least 150 higher education credits, including a graded thesis for the degree of Bachelor in the Social Sciences, Humanities or equivalent.

Oral and written proficiency in English equivalent to English 6/B (advanced) from Swedish upper secondary school is a requirement. International qualifications will be assessed in accordance with national guidelines.

Further information

The course cannot be included in a degree together with the course SIMM16 *Introduction to Quantitative Methods*, 7.5 credits, and SIMM32 *Quantitative Methods: Multivariate Analysis*, 7.5 credits.

Subcourses in SIMM61, Quantitative Data Analysis in R

Applies from H21

2101 Individual paper, 7,5 hp
Grading scale: Fail, E, D, C, B, A
2102 Lab reports, 7,5 hp
Grading scale: Fail, E, D, C, B, A