Quantitative Methods in the Social Sciences (SO7030)
7.5 ECTS credits
Spring 2017

Course description
The course covers OLS (least squares) regression and logistic regression, and (more briefly) extensions of these methods such as panel data analysis, multilevel analysis as well as ordered and multinomial logit. The course puts emphasis on craftsmanship to implement, understand and interpret analyzes of these techniques rather than statistical theory, although some statistical theory is part of the deeper understanding of the course requires. The central part of the course is the computer exercises where the students themselves are working to analyze a data set.

The course discusses, among other things, confounding and holding factors constant, estimators accuracy and precision, the use of dummy variables, interaction effects, variable transformations, consequences and possible actions when the least squares method conditions are not met, and regression diagnostics. It also deals with problems of determining causality on the basis of quantitative analysis.

Learning outcomes
After completing the course, students should:

Knowledge and understanding
1. Have good knowledge of OLS regression and logistic regression, and the statistical foundations of these methods
2. Have an orienting knowledge about the multinomial logit, ordered logit, multilevel methods, panel data analysis and event history analysis
3. Understand the fundamental problems of causality in the social sciences

Skills and competencies
4. Be able to prepare a dataset, with the necessary transcodes so that it can be used for regression analyzes
5. Be able to independently perform, present and interpret the results of OLS regression
6. Be able to independently perform, present and interpret the results of a logistic regression
7. Both practically and theoretically analyze the model specification and functional form, and correct potential problems and sources of error in OLS regression; able to compare and evaluate different regression models

Values and attitudes
8. Be able to assess and critically evaluate results from published quantitative analyses in social science research
9. Understand the methods that are suitable and unsuitable to use, given data characteristics, dependent variable and issues

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1 This text captures the most important information from the Course Plan (in Swedish), which contains all formal requirements and regulations, and adds reading instructions and other practical matters.
Teaching
The teaching consists of lectures and practical exercises in the computer lab. There is one mandatory seminar on causality. See schedule on Mondo.

Examination
A. the examination consists of six assignments, five of which are based on computer exercises and one on interpretations of already completed analyzes. Two assignments are carried out in groups of two students, and four tasks are carried out individually. Examination also requires active participation in a mandatory seminar on Causality.

B. Grading is done according to a seven goal-related grading scale A-F.

A - Excellent
B - Very Good
C - Good
D - Satisfactory
E - Sufficient
Fx - Insufficient
F - Fail

The rating is based on an overall assessment of all assignments. The nine learning outcomes / course objectives are examined through six assignments. Each task examines one or more of the expected learning outcomes, and each expected learning outcomes are examined through one or more assignments.

Course objectives are rated for each task in the three stages ‘Good’, ‘Sufficient’ (with some gaps), and ‘Not enough’. The final course grade is a compilation of an assessment matrix outlined in Table 1 with the dimension 6 × 9 (6 assignments × 9 course objectives/learning outcomes). Not all course objectives examine by all assignments, but is examined at least once.

The more statistically complex and theoretically challenging assignments carried out individually have greater weight in grading, and the final grade is not a simple aggregation of the grades, but an overall assessment. A weak performance in a course objectives are not automatically outweighed by a strong result in a different course objective. The final grade will reflect the lowest knowledge gained in all course objectives rather than the average knowledge of these goals.

If an assignment is graded ‘Not Enough’, the course grade becomes Fx. If more than one assignment is graded ‘Not Enough’ the course grade will be F. If any assignments, the grade will be F.
Table 1. Matrix for grading

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9. Understand the methods that are suitable and unsuitable to use, given data characteristics, dependent variable and issues
C. Students with grade Fx or F has the right to undergo further tests as long as the course is given in order to achieve a minimum grade of E. Students who receive a grade E may not take the test for higher grade. Students with grade Fx or F on an examination twice by the examiner may request another examiner to grade the exam. Such requests should be made to the Director of Studies. Students may demand that examination according to this syllabus up to three semesters after it expired. Such requests should be made to the Director of Studies. Tests also refers to other compulsory elements of the course.

D. Examination takes place twice a year: one in connection with the course end, and six months after the end of the course. Assignments must be submitted no later than one week after completion of the course to be examined during the current semester. If a student does not meet the deadline or leaving at least one task with significant inaccuracies examination is done after the next deadline.

Reading list

Required readings
Christopher Dougherty. *Introduction to Econometrics*. Oxford university press
2nd edition: Chap. 2-9, 11
3rd edition: Chap. (part of 1) 2-8 and 10 (chapter 14 by option)
(Simultaneous equations and time series analysis is not covered in this course)

Online resources at [http://global.oup.com/uk/orc/busecon/economics/dougherty4e/](http://global.oup.com/uk/orc/busecon/economics/dougherty4e/)
(study guide, slides, datasets used in book)


Bryk & Raudenbush. “Hierarchical Linear Models …” Copy at Mondo (lecture 8, seminar)


Gujarati. Chapter 16 “Panel Data Regression” in *Basic Econometrics*. Copy at Mondo (lecture 8, seminar)

Mood, Carina. 2010. "Logistic Regression: Why We Cannot Do What We Think We Can Do, and What We Can Do About It." European Sociological Review 26:67-82. (lecture 6).

Pindyck & Rubinfeld, use of dummy variables. Copy at Mondo (lecture 1-3)


Stock & Watson. The Mozart effect, interaction etc. in Introduction to Econometrics. Copy at Mondo (lecture 1-4)

Trond Petersen “Recent Advances in Longitudinal Methodology”, *Annual Review of Sociology* Vol 19 (1993). (Read only Part II pages 446-454) (Lecture 8, seminar)


(You can access articles via the journal’s homepage on a computer connected to the SU web; google scholar often provides the direct link).

Optional easy introduction to regression analysis

**Contact information**
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The teachers are Love Bohman, Martin Hällsten, and Hernan Mondani ([hernan.mondani@sociology.su.se](mailto:hernan.mondani@sociology.su.se)).