Linnæus University

Course syllabus

School of Business and Economics
Department of Economics and Statistics

1ST073 Undersökningsmetodik och kvantitativa metoder, 15 högskolepoäng
Survey analysis and Quantitative methods, 15 credits

Main field of study

Statistics

Subject

Statistics

Level

First cycle

Progression

G1F

Date of Ratification

Approved 2024-06-24.
The course syllabus is valid from spring semester 2025.

Prerequisites

Economic statistics I 7.5 credits
Economic statistics II 7.5 credits
English 6, or the equivalent.

Objectives

Module 1: Quantitative methods, 7.5 credits
After completing this module the student should be able to:

- clarify the link between the quality of data and the usefulness in a statistical analysis
- clarify the importance of data screening and transformations
- explain the effect that a data transformation has on interpretations of a statistical

model
- show understanding of the importance of selecting an appropriate statistical analysis
- explain the concepts of regression analysis, regression analysis in terms of analysis of survival data
- explain the concepts of logistic regression analysis and discriminant analysis and their differences
- explain the concepts of principal component analysis, factor analysis and cluster analysis and their differences
- critically assess the advantages and disadvantages of statistical models included in the Module 1
- implement and interpret basic univariate and multivariate analyses in Statistical software

Module 2: Survey analysis, 7.5 credits
After completing this module the student should be able to:

- clarify the link between the quality of data and the usefulness of a statistical analysis
- clarify the importance of an explicit connection between the sampling plan and the statistical model being used
- explain the concept and importance of randomization
- explain the concepts of stratified sampling, clusters sampling and two-step sampling
- explain the consequences of missing data and sampling bias
- identify an appropriate sampling method
- design a questionnaire
- design, conduct, analyze and present a statistical survey analysis
- critically assess the advantages and disadvantages of sampling designs included in the Module 2

Content
Module 1: Quantitative methods, 7.5 credits
The module contains:

- preparation for data analysis: data screening and transformation
- regression analysis including: ridge regression, logistic regression, path analysis
- missing values and dummy variables
- discriminant analysis
- principal component analysis
- factor analysis
- cluster analysis

Module 2: Survey analysis, 7.5 credits
The module contains:

- sampling procedures, simple random sampling, stratified sampling, cluster sampling, two-step sampling
- randomization
- survey dimensioning
- questionnaire design
- missing data analysis
- reliability theory

- regression methods

Type of Instruction

The teaching consists of lectures and computer group exercises.

Examination

The course is assessed with the grades A, B, C, D, E or F.

Module 1: Quantitative methods, 7.5 credits
The module is examined through two written group assignments, 0.5 credits and 1 credit, and an individual written examination 6 credits.

Module 2: Survey analysis, 7.5 credits
The module is examined through one written group assignment 1.5 credits and an individual written examination 6 credits.

The following applies to all modules:
The grade A constitutes the highest grade on the scale and the remaining grades follow in descending order where the grade E is the lowest grade on the scale that will result in a pass. The grade F means that the student's performance is assessed as fail.

The grade of the course is a combined assessment from the grades of the various course modules. The combined assessment is based on the grades and the scope of the course (15 credits). The more extensive a module is, the greater impact it will have on the final grade. Module grades with the grading scale between G-U will not be considered into the combined assessment. However, a G is required for each of the modules in order to receive a final course grade.

Resit examination is offered in accordance with Linnaeus University's Local regulations for courses and examination at the first- and second-cycle levels.

In the event that a student with a disability is entitled to special study support, the examiner will decide on adapted or alternative examination arrangements.

Course Evaluation

A course evaluation should be conducted during the course or in connection with its conclusion. The results and analysis of the completed course evaluation should be promptly communicated to students who have completed the course. Students participating in the next course instance should be informed of the results of the previous course evaluation and any improvements that have been made, no later than at the start of the course.

Overlap

The course cannot be included in a degree along with the following course/courses of which the content fully, or partly, corresponds to the content of this course:
1ST063 with 15 credits.

Required Reading and Additional Study Material

Module 1: Quantitative methods, 7.5 credits
Required reading
Afifi, A., Clark, V. A. & May, S. *Practical Multivariate Analysis*. Chapman & Hall.

Latest edition. About 540 pages.

Additional study material
Statistical software online manual (this electronic resource is part of the Statistical software. The manual cannot, and should not, be bought).

Module 2: Survey analysis, 7.5 credits
Required reading
Sharon, L. Lohr. *Sampling: Design and Analysis*. CRC Press. Latest edition. About 600 pages.

Additional study material
Statistical software online manual (this electronic resource is part of the Statistical software. The manual cannot, and should not, be bought).