School of Economics and Management

STAG33, Statistics: Regression Analysis, 7.5 credits

Statistik: Regressionsanalys, 7,5 högskolepoäng

First Cycle / Grundnivå

Details of approval

The syllabus was approved by The Board of the Department of Statistics on 2023-05-29 to be valid from 2024-01-15, spring semester 2024.

General Information

First cycle level course in statistics. The course is elective in a Bachelor degree in Statistics. The course may also be taken as a single subject course or within other Bachelor and Master's programmes at Lund University.

Language of instruction: Swedish

Main field of studies	*Depth of study relative to the degree requirements*
Statistics	G1F, First cycle, has less than 60 credits in first-cycle course/s as entry requirements

Learning outcomes

Knowledge and understanding

For a passing grade the student shall

- demonstrate knowledge and understanding of estimation and inference in regression models,
- demonstrate knowledge and understanding of tools for model diagnostics and remedial measures,
- demonstrate knowledge and understanding of techniques for model choice, and
- demonstrate knowledge of matrix operations.

Competence and skills

For a passing grade the student shall

- demonstrate the ability to estimate parameters in regression models by hand using matrices as well as by using a computer,

- demonstrate the skill of deriving the statistical properties of estimators,
- demonstrate the ability to perfom statistical inference using regression models, and
- demonstrate the ability to present and discuss choice of model and model validation in speech and writing.

Judgement and approach

For a passing grade the student shall

- demonstrate the ability to make assessments with regard to model choice.

Course content

The course covers simple linear and multiple regression, mainly with a focus on non-experimental data from economics and social science. Great emphasis is placed on model diagnostics through residual analysis and on the effects of and remedial tools for deviations from the classical regression model, e.g. non-constant variance and autocorrelation. An important theme is the choice of a suitable regression model, also based on different purposes (inference or prediction). Selection of independent variables is treated both with classic techniques such as e.g. stepwise regression and more modern techniques such as regularisation. Furthermore, cross-validation, predictive ability and consequences of specification errors are treated.

The course also provides an introducation to matrix algebra.

Course design

The course is designed as a set of lectures, exercise sessions, computer lab sessions, and seminars.

Assessment

The examination consists of written exam and assignments that are presented in speech and in writing.

The University views plagiarism very seriously, and will take disciplinary actions against students for any kind of attempted malpractice in examinations and assessments. Plagiarism is considered to be a very serious academic offence. The penalty that may be imposed for this, and other unfair practice in examinations or assessments, includes suspension from the University.

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.

A (Excellent) 85-100 points/percent. A distinguished result that is excellent with regard to theoretical depth, practical relevance, analytical ability and independent thought.

B (Very good) 75-84 points/percent. A very good result with regard to theoretical depth, practical relevance, analytical ability and independent thought.

C (Good) 65-74 points/percent. The result is of a good standard with regard to theoretical depth, practical relevance, analytical ability and independent thought and lives up to expectations.

D (Satisfactory) 55-64 points/percent. The result is of a satisfactory standard with regard to theoretical depth, practical relevance, analytical ability and independent thought.

E (Sufficient) 50-54 points/percent. The result satisfies the minimum requirements with regard to theoretical depth, practical relevance, analytical ability and independent thought, but not more.

F (Fail) 0-49 points/percent. The result does not meet the minimum requirements with regard to theoretical depth, practical relevance, analytical ability and independent thought.

To pass the course, the students must have been awarded the grade of E or higher.

The final grade is determined as a combination of the results on the written exam and the assignments.

Entry requirements

General entry requirements and STAA40 Statistics: Basic Course or STAA41 Statistics: Basic Course 1 or the equivalent.

Further information

This course replaces STAG23 Statistics: Regression Analysis. The two courses may not be combined in a degree.

Subcourses in STAG33, Statistics: Regression Analysis

Applies from V24

2401 Examination, 5,0 hp
Grading scale: Fail, Pass
2402 Assignments, 2,5 hp
Grading scale: Fail, Pass