Time Series Analysis

Single subject and programme course

6 credits

Tidserieanalys

732A62

Valid from: 2017 Autumn semester

Determined by

The Quality Board at the Faculty of Arts
and Sciences

Date determined

2017-02-03

Main field of study

Statistics

Course level

Second cycle

Advancement level

A1X

Course offered for

- Master´s Programme in Statistics and Data Mining

Entry requirements

A bachelor's degree in one of the following subjects: statistics, mathematics, applied mathematics, computer science, engineering, or equivalent. Completed courses in calculus, linear algebra, statistics and programming are required. Documented knowledge of English equivalent to Engelska B/Engelska 6.

Intended learning outcomes

After completion of the course, the student should on an advanced level be able to:
- apply knowledge about widely used methods for the analysis of time series data,
- account for major principles for the selection, estimation and validation of time series models,
- use statistical software to fit appropriate time series models to given data sets, make inference about time series components, and compute forecasts and their statistical uncertainty,
- demonstrate insightful assessment of the generalization capacity of the statistical relationships on which forecasts can be based.

Course content

The course provides basic skills for professional work in which time series data are explored, modified, modelled and assessed to detect trends and make forecasts.
The course focus on:
- time series decomposition,
- autocorrelation and partial autocorrelation,
- forecasting using time series regression, ARIMA models and transfer functions,
- intervention analysis,
- trend detection.

Teaching and working methods

The teaching comprises lectures, seminars, and computer exercises. The lectures are devoted to presentations of concepts, theories and methods. The computer exercises provide practical experience of data analysis. The seminars comprise student presentations and discussions of the assignments.
Homework and independent study are a necessary complement to the course.
Language of instruction: English.

Examination

Assignments encompassing computer-based data analysis. One final written examination. Detailed information about the examination can be found in the course's study guide.

Students failing an exam covering either the entire course or part of the course twice are entitled to have a new examiner appointed for the reexamination.

Students who have passed an examination may not retake it in order to improve their grades.

Grades

ECTS, EC

Other information

Planning and implementation of a course must take its starting point in the wording of the syllabus. The course evaluation included in each course must therefore take up the question how well the course agrees with the syllabus.

The course is carried out in such a way that both men´s and women´s experience and knowledge is made visible and developed.

Department

Institutionen för datavetenskap

LINKÖPINGS UNIVERSITET