Time Series Analysis

Single subject and programme course

6 credits

Tidsserieanalys

732A34

Valid from:

Determined by

The Quality Board at the Faculty of Arts
and Sciences

Date determined
2008-09-10

Revision date
2013-03-18

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

For acceptance to the course, the student must have a bachelor's degree with a total of at least 90 ECTS credits (1.5 years of full-time studies) in mathematics, applied mathematics, statistics, and computer science. The undergraduate courses in mathematics should include both calculus and linear algebra. Basic undergraduate courses in statistics and computer science are also required. Documented knowledge of English equivalent to Engelska B/Engelska 6: internationally recognized test, e.g. TOEFL (minimum scores: Paper based 575 + TWE-score 4.5, and internet based 90+TWE-score 20), IELTS, academic (minimum score Overall band 6.5 and no band under 5.5), or equivalent.

Intended learning outcomes

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.

Having completed the course, the student should be able to:
- use 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: (i) fit appropriate time series models to given data sets, (ii) make inference about time series components, and (iii) 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

- 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.
Language of instruction: English.

Examination

Assignments encompassing computer-based data analysis. One final written examination.

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.

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Department

Institutionen för datavetenskap