SF2943 Time Series Analysis 7.5 credits

Tidsserieanalys

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

Course syllabus for SF2943 valid from Autumn 2020

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Mathematics

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

The goal of the course is to provide a basic understanding of theoretical and practical tools for analyzing time series. Computer-aided projects form an essential learning activity.

In order to pass the course, the student shall be able to:

- solve problems that require knowledge and understanding of basic concepts and models in the theory of time series, in particular models of ARMA type,
- apply theoretical and practical tools to analyze time series data, quantify uncertainty in estimated models and predict future values based on observed data,
- apply mathematical theory to analyze and explain properties of different time series models, and
- account for conclusions from analyses of time series data and critically evaluate such analyses from a scientific perspective.

Course contents

General introduction to time series. Stationary and non-stationary models, e.g. ARMA- and ARIMA-models. Projections and prediction of time series. Spectral theory. Estimation of parameters and spectra. Models on state-space form and Kalman filtering.

Specific prerequisites

Completed basic course in probability theory and mathematical statistics (SF1918, SF1922 or equivalent).

Examination

- OVN1 - Assignments, 3.0 credits, grading scale: P, F
- TENA - Examination, 4.5 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.