



School of Economics and Management

## EEH040F, Time Series Analysis II, 7.5 credits

*Tidsserieanalys II, 7,5 högskolepoäng*  
Third Cycle / Doktorandnivå

---

### Details of approval

Approved by the Board of the Department of Economic History, Lund University School of Economics and Management 2021-11-09.

### General Information

This is an optional course at the PhD programme.

The language of instruction is English.

### Learning outcomes

#### Knowledge and understanding

Students shall:

- have a deeper understanding of univariate time series analysis in levels,
- understand how unit root hypotheses are formulated and tested in univariate models,
- have an understanding of multivariate time series analysis in levels,
- have a deeper understanding of cointegration analysis,
- be able to formulate and test the hypothesis of cointegration in both single equation and multivariate time series models,
- be able to formulate and test hypotheses concerning the cointegration vector,
- have an understanding of the analysis of either volatility in a univariate time series or unit roots and cointegration in panel data models,
- be able to generalise their knowledge to economic problems that haven't been treated during the course,
- be able to understand relevant empirical and econometric research.

#### Competence and skills

Students shall have the ability to independently:

- apply advanced econometric tools to economic problems using time series,

- choose a suitable time series model to analyse a specific problem,
- evaluate whether the assumptions made by the chosen model are reasonable,
- apply rational modelling strategies even when basic assumptions must be rejected,
- implement econometric analyses of time series using econometric software,
- give an account of and discuss their abilities within time series analysis and the appropriateness of different time series methods for the analysis of economic problems.

### **Judgement and approach**

Students shall have developed the ability to pursue further studies in the subject and should be able to search for and evaluate information with a high degree of independence. Students shall also have developed the ability to individually write an empirically orientated paper at the master level using time series methods.

### **Course content**

The course gives an introduction to basic concepts within time series analysis. The univariate analysis of time series in this course is based upon ARMA/ARIMA and ARCH-/GARCH models. Multivariate time series analysis is based on VAR models. Nonstationary time series are analysed using unit root tests, cointegration methods and VEC models. Theoretical studies are interwoven with practical applications in financial economics and macroeconomics.

### **Teaching and assessment**

The course is designed as a series of lectures and computer exercises.

Written exams take place at the end of the course. There will be further opportunities for examination close to this date. The course also consists of a series of home assignments. Other forms of examination may be used to a limited extent.

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

### **Grading scale**

Marking scale: Fail or Pass.

### **Prerequisites**

PhD students applying for this course should have at least 90 ECTS-credits in economics are required. These must include 15 ECTS-credits at the advanced level, including the

courses NEKN31 "Advanced Econometrics", NEKN82 "Empirical Finance" or the equivalent.

### **Further information**

This course cannot be included in the same degree as NEK712, NEKM40 or NEKN34.