School of Economics and Management

NEKN34, Economics: Time Series Analysis, 7.5 credits

Nationalekonomi: Tidsserieanalys, 7,5 högskolepoäng

Second Cycle / Avancerad nivå

Details of approval

The syllabus was approved by The Board of the Department of Economics on 2011-06-07 and was last revised on 2022-09-13. The revised syllabus applies from 2022-09-13, autumn semester 2022.

General Information

This is a single subject master course in economics. The course is either obligatory or optional within a number of master programmes at Lund University.

Language of instruction: English
Teaching may be in Swedish if all registered students have a good knowledge of Swedish.

Main field of studies	*Depth of study relative to the degree requirements*
Economics	A1N, Second cycle, has only first-cycle course/s as entry requirements

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 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 sufficient competence 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.

Course design

1. Teaching: Tuition consists of lectures and computer exercises

Assessment

1. Examination: The examination consists of a written exam and home assignments. The written exam takes place at the end of the course. There will be further opportunities for examination close to this date. Other forms of examination may be used to a limited extent.
2. Limitations on the number of examination opportunities: –

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

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.
1. Grading: Grade (Definition), Points or percentage out of maximum points, Characteristic
A (Excellent), 85–100, A distinguished result that is excellent with regard to theoretical depth, practical relevance, analytical ability and independent thought.
B (Very good), 75–84, A very good result with regard to theoretical depth, practical relevance, analytical ability and independent thought.
C (Good), 65–74, The result is of a good standard with regard to theoretical depth, practical relevance, analytical ability and independent thought.
D (Satisfactory), 55–64, The result is of a satisfactory standard with regard to theoretical depth, practical relevance, analytical ability and independent thought.
E (Sufficient), 50–54, The result satisfies the minimum requirements with regard to theoretical depth, practical relevance, analytical ability and independent thought, but not more.
U (Fail), 0–49, The result does not meet the minimum requirements with regard to theoretical depth, practical relevance, analytical ability and independent thought.
Students have to receive a grade of E or higher in order to pass a course.

2. Weighting grades from different parts of the course: –

3. Grading scales for different parts of the course: –

Entry requirements

Students admitted to the Master Programme in Economics or the Master Program in Finance, and who have taken the courses NEKN31 "Advanced Econometrics" or NEKN82 "Empirical Finance", are eligible to take this course. Students admitted to the Master Programme in Data Analytics and Business Economics are eligible to take this course. For other students 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 an equivalent course in econometrics at the advanced level.

Further information

1. Transitional regulations: This course replaces NEK712 "Time Series Analysis".

2. Limitations in the period of validity: –

3. Limitations: This course may not be taken by students who have passed NEK712 "Time Series Analysis".

4. Similar courses: –

5. Limitations in renewed examination: –

Subcourses in NEKN34, Economics: Time Series Analysis

Applies from V12

1101 Time Series Analysis, 7,5 hp
Grading scale: Fail, E, D, C, B, A