School of Economics and Management

NEKP35, Economics: Econometric Theory, 15 credits

Nationalekonomi: Ekonometrisk teori, 15 högskolepoäng

Second Cycle / Avancerad nivå

Details of approval

The syllabus is an old version, approved by The Board of the Department of Economics on 2018-10-09 and was last revised on 2019-11-05. . The revised syllabus applied from 2019-11-05. , spring semester 2020.

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	A1F, Second cycle, has second-cycle course/s as entry requirements

Learning outcomes

Knowledge and understanding

Students shall:

- have a deeper understanding of the econometric results presented in this course,
- understand the geometrical perspective of econometric theory,
- be able to understand relevant empirical and econometric research,
- understand concepts from probability theory and statistics relevant to econometric theory,
- understand concepts from linear algebra relevant to econometric theory,
- have basic knowledge of programming.

Competence and skills

Students shall have the ability to independently:

- apply advanced econometric tools to economic problems,
- critically review and evaluate assumptions and implementation of econometric analysis,
- apply rational modelling strategies even when basic assumptions must be rejected,
- implement econometric analyses using econometric software,
- implement econometric analyses by writing their own code.

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.

Course content

The content is as follows:

- Linear algebra (advanced matrix algebra, vector spaces, subspaces, metric spaces, spectral theorem),
- Mathematics (measure theory, Lebesgue integral, Stieltjes integral, multivariable calculus),
- Numerical analysis (numeric optimization, numeric derivative and numeric integration),
- Probability theory (probability spaces, random variable, random vector, moments, functions of random variables, moment generating functions),
- Asymptotic analysis (convergence in probability, law of large numbers, central limit theorems),
- Statistic (estimator, properties of an estimator, inference),
- Regression analysis from a geometric perspective,
- The statistical properties of the OLS estimator and inference,
- Non-linear regression analysis,
- Generalized regression analysis,
- Endogeneity and instrumental variables,
- Analysis of moments: method of moments and generalized method of moments,
- The maximum likelihood method,
- Simulation methods (Bootstrap, SMM).

Course design

1. Teaching: Tuition consists of lectures.

Assessment

1. Examination: Examination consists of a written examination that takes place at the end of the course. There will be further opportunities for examination close to this date. In addition, there is a set of home assignments. 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 who have been admitted to the Master Programme in Economics and have taken at least 30 ECTS-credits at the advanced level including NEKN31 "Advanced Econometrics" are eligible to take this course. For other students at least 90 ECTS-credits in economics are required. These must include 30 ECTS-credits at the advanced level, including NEKN31 "Advanced Econometrics" and NEKN01 "Master Essay I", or their equivalents.

Further information

1. Transitional regulations: This course replaces NEKP33 "Statistical Methods for Econometrics" and NEKP34 "Econometric Theory".

2. Limitations in the period of validity: –

3. Limitations: This course may not be included in the same degree as NEK/18 "Statistical Methods for Econometrics", NEK719 "Advanced Econometrics", NEKM52 "Statistical Methods for Econometrics", NEKM53 "Econometric Theory", NEKP33 "Statistical Methods for Econometrics" or NEKP34 "Econometric Theory".

4. Similar courses: –

5. Limitations in renewed examination: –

Subcourses in NEKP35, Economics: Econometric Theory

Applies from V19

1801 Econometric Theory, 15,0 hp
Grading scale: Fail, E, D, C, B, A