



School of Economics and Management

NEKP33, Economics: Statistical Methods for Econometrics, 7.5 credits

*Nationalekonomi: Statistiska metoder för ekonometri, 7,5
högskolepoäng*

Second Cycle / Avancerad nivå

Details of approval

The syllabus is an old version, approved by The Board of the Department of Economics on 2011-06-07 and was valid from 2011-06-07, autumn semester 2011.

General Information

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

Language of instruction: English

Teaching is in English. (Teaching may be in Swedish if all registered students have a good knowledge of Swedish).

Main field of studies

Economics

Depth of study relative to the degree requirements

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

Learning outcomes

Knowledge and understanding

Students shall:

- understand central concepts from probability theory, such as probability space, random variable, probability distribution, moments and limit theorems,
- understand central concepts from statistics such as sample moments, estimation criteria (such as unbiasedness and consistency), estimation techniques (such as maximum likelihood and method of moments) and hypothesis testing.

Competence and skills

Students shall have the ability to independently be able to:

- calculate probabilities and moments for random variables with given densities,
- derive densities for a function of one or several random variables,
- use asymptotic theory to derive the limit of a sequence of random variables,
- calculate expected values and variances and prove various properties such as unbiasedness for an estimator,
- construct, analyse and maximise a likelihood function,
- design and test various statistical hypotheses,
- describe and discuss their knowledge in probability theory and statistics.

Judgement and approach

Students shall have a command of probability theory and statistics so as to be able to lay the foundation for independent acquisition of econometrics and economic theory based on these skills, and to deepen their knowledge of probability theory and statistics.

Course content

This course consists of two parts: probability theory and statistics. The starting point for probability theory is the probability space (sample space, event space and probability measure). Starting from the probability space we define random variables and analyse their properties. Specific distributions, such as the normal, t-, F- and chi squared distributions are investigated. A treatment of functions of random variables concludes the first part.

The statistics part of the course begins with the definition of an estimator and how to derive the distribution of an estimator. A number of criteria for evaluating an estimator are then discussed and general methods for deriving a good estimator are described. There is a focus on maximum likelihood, but other methods such as GMM are also discussed. The course is concluded with a theoretical treatment and application of statistical hypothesis testing.

No specific gender perspective is adopted in this course.

Course design

1. Teaching: Tuition consists of lectures and exercises.

Assessment

1. Examination: The course is examined through a number of home assignments.
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.

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: The official grading scale is A, B, C, D, E and Fail.
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 a Master Programme in Economics or the Master Programme in Economic Research Methods 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 the courses NEKN31 "Advanced Econometrics" and NEKN01 "Master Essay I" or their equivalents.

Further information

1. Transitional regulations: This course replaces NEKM52 "Statistical Methods for Econometrics".
2. Limitations in the period of validity: –
3. Limitations: This course may not be included in the same degree as NEK718 "Statistical Methods" or NEKM52 "Statistical Methods for Econometrics".
4. Similar courses: –
5. Limitations in renewed examination: –

Subcourses in NEKP33, Economics: Statistical Methods for Econometrics

Applies from H12

1101 Statistical Methods for Econometrics, 7,5 hp
Grading scale: Fail, E, D, C, B, A