

M.Sc. Economics

Code:		Type:	M.Sc. 1 st semester lecture series
Title:	Statistics		
Lecturer:	Dietmar Bauer		
ECTS:	7	Contact hours (per semester):	24 á 90 min.
Semester:	Winter 2009/10	Frequency of the lecture:	Once a week
Dates:	October 2 nd , 2009 until January 22 nd , 2010		
Prerequisites:	None		

Learning objectives (What are the intended learning outcomes? Which skills will be acquired?):

The course provides an introductory treatment of statistics including the relevant prerequisites of probability theory. The course takes an abstract, formal point of view and centers on the explanation of the underlying concepts behind statistical inference. At the end of the course the students understand the mechanisms underlying statistical inference. They are able to properly interpret the outcomes of a test. Moreover, the students possess the tools necessary in order to design and execute tests on their own scientific hypotheses. Additionally the level of the course is set such that the students acquire the relevant skills in order to be able to cope with scientific literature in the econometrics community. The course lays the foundations for the following courses within the program.

Content (Which professional competence and which contents will be imparted?):

The course covers the following topics:

- Introduction of concepts from probability theory necessary for the understanding of statistical inferential procedures
- Convergence concepts for sequences of random variables
- Basic descriptive statistics
- Principles of statistical tests
- Estimation theory
- Optimal testing
- Bayesian statistics

Mastering these topics allows to correctly interpreting the outcome of statistical tests as well as the design and application of new tests. This knowledge can be directly applied by the applied researcher and provides a sound foundation on which a profound understanding of the literature can be based. In this case the course provides a starting point upon which consecutive studies can build on.

Teaching approach (Description of the learning and teaching methods):

The lecture mixes conventional blackboard and PowerPoint presentations in combination with a total of 6 problems sessions, where students get hands on experience.

Workload (Definition of workload (ECTS), divided in pre-modules (e.g. pre-readings), core-modules (contact hours), post-modules (e.g. case studies)):

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Language of instruction (Information on the language of teaching):

English

Obligatory literature (E.g. scripts, books, articles, cases, papers):

Lecture notes (distributed at the start of the lecture free of charge for use within this course).

Additional literature (E.g. books, articles, cases, papers):

- Bauer, H.: 1990, *Wahrscheinlichkeitstheorie*, De Gruyter.
- Casella, G. and Berger, R.: 2002, *Statistical Inference*, 2nd edn, Duxbury
- Davidson, J.: 1994, *Stochastic Limit Theory*, Oxford University Press.
- Newey, W. and McFadden, D.: 1994, Large sample estimation and hypothesis testing, in R. F. Engle and D. L. McFadden (eds.), *Handbook of Econometrics*, Elsevier Science, chapter 36, pp. 2111-2245.

Mode of examination (Mode of the examinations and tests (e.g. oral or written examination, lecture, homework, papers, class participation):

- written exam
- problem sessions
- case study

Grading:

20% homework (problem sessions), 30% project, 50% written exam

Special features (E.g. excursion, guest speaker):

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Contact information:

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Office hours:

By appointment

Course website:

<https://cecnet.tuwien.ac.at/>