



APPLIES TO ACADEMIC YEAR 2016/2017

GRA 6039 Statistics with Econometrics and Programming

Programme

Master of Science in Business (Economics), Master of Science in Business (Finance), Master of Science in Finance

Responsible for the course

Steffen Grønneberg

Department

Department of Economics

Term

According to study plan

ECTS Credits

6

Language of instruction

English

Introduction

The aim of the course is to equip the students with an understanding of statistical techniques at a level expected among master students in economics, finance and related disciplines. Programming will be introduced and used as a natural part of data analysis, and simulation be used to assess the finite sample behaviour of both large sample techniques and robustness properties of statistical methods. Formal reasoning with asymptotic statistics will be introduced, and while the central theorems in the course will not be proved (the central limit theorem, the law of large numbers, the continuous mapping theorem, Slutsky's theorem, as well as their multivariate extensions), they will be applied in a mathematically rigorous manner. Both theoretical and practical exercises will be given.

Learning outcome

After taking this course, students should have a solid knowledge of the general linear regression model and its most common extensions under econometric assumptions, and gain practical experience in applying these models using modern software. They should also be able to independently write programmes related to data analysis, perform simulation experiments, and develop their critical reasoning for econometric investigations.

Prerequisites

All courses in the Masters programme will assume that students have fulfilled the admission requirements for the programme. In addition, courses in second, third and/or fourth semester can have specific prerequisites and will assume that students have followed normal study progression. For double degree and exchange students, please note that equivalent courses are accepted.

Compulsory reading

Books:

Stock, James H., Watson, Mark W. 2015. Introduction to econometrics. Updated 3rd ed., Global ed. Pearson

Recommended reading

Course outline

1. Review of probability theory and basic statistics.
2. The theory of asymptotic inference in simple linear regression with econometric assumptions, including the Slutsky theorem, the continuous mapping theorem and related tools from asymptotic statistics.
3. An introduction to AR, ADL and related time series models, including tests for typical departures from stationarity, and model selection procedures with a focus on prediction.
4. Multiple linear regression using linear algebra. The theory of multiple linear regression with econometric assumptions. Joint hypotheses testing and generalized method of moments estimation.

Computer-based tools

R
Stata

Learning process and workload

A course of 6 ECTS credits corresponds to a workload of 160-180 hours. Lectures and exercises.

Please note that while attendance is not compulsory in all courses, it is the student's own responsibility to obtain any information provided in class that is not included on the course homepage/It's learning or text book.

Examination

Students will have ca 2 weeks for writing the term paper. We might require an oral defense of the term paper.

Form of assessment	Weight	Group size
Term paper	40%	Group of max 3 students
Written examination 3 hours	60%	Individual

Specific information regarding student assessment will be provided in class. This information may be relevant to requirements for term papers or other hand-ins, and/or where class participation can be one of several components of the overall assessment. All parts of the assessment must be passed in order to get a grade in the course. Candidates may be called in for an oral hearing as a verification/control of written assignments.

Examination code(s)

GRA60393 accounts for 40% of the grade (term paper)

GRA60394 accounts for 60% of the grade (written exam, 3 hours)

Both evaluations must be passed in order to get a grade in the course.

Examination support materials

BI approved exam calculator

Bilingual dictionary

Permitted examination support materials for written examinations are detailed under examination information in the student portal @bi. The section on support materials and the use of calculators and dictionaries should be paid special attention to.

Re-sit examination

It is only possible to retake an examination when the course is next taught. The assessment in some courses is based on more than one exam code. Where this is the case, you may retake only the assessed components of one of these exam codes. All retaken examinations will incur an additional fee. Please note that you need to retake the latest version of the course with updated course literature and assessment. Please make sure that you have familiarised yourself with the latest course description.

Additional information

Honour code. Academic honesty and trust are important to all of us as individuals, and are values that are integral to BI's honour code system. Students are responsible for familiarising themselves with the honour code system, to which the faculty is deeply committed. Any violation of the honour code will be dealt with in accordance with BI's procedures for academic misconduct. Issues of academic integrity are taken seriously by everyone associated with the programmes at BI and are at the heart of the honour code. If you have any questions about your responsibilities under the honour code, please ask. The learning platform itslearning is used in the teaching of all courses at BI. All students are expected to make use of itslearning.