Exchange programme Vrije Universiteit Amsterdam

Vrije Universiteit Amsterdam - Exchange programme Vrije Universiteit Amsterdam - 2024-2025

Exchange

Vrije Universiteit Amsterdam offers many English-taught courses in a variety of subjects, ranging from arts & culture and social sciences, neurosciences and computer science, to economics and business administration.

The International Office is responsible for course approval and course registration for exchange students. For details about course registration, requirements, credits, semesters and so on, please visit the exchange programmes webpages.

Econometrics I

Course Code	E_EOR2_TR1
Credits	6
Period	P1+2
Course Level	200
Language Of Tuition	English
Faculty	School of Business and Economics
Course Coordinator	dr. J.M.A. Telg
Examiner	dr. J.M.A. Telg
Teaching Staff	dr. J.M.A. Telg
Teaching method(s)	Lecture, Study Group, Written partial exam

Course Objective

This course covers the most important concepts, theory, methods and techniques related to the linear regression model and forms a basis for future econometrics courses. You will develop a thorough understanding of linear regression for cross-sectional data and study its use from both a theoretical and empirical point of view. We derive various estimators (ordinary least squares, weighted least squares and maximum likelihood) in the context of linear regression models and study their finite-sample and asymptotic properties. Moreover, you will learn how to assess model fit based on different measures and how to perform prediction and inference in the linear regression model. Period 1 mostly focuses on the *simple* linear regression model (i.e. only one explanatory variable). In Period 2, we exploit the strength of matrix algebra and study the *multiple* linear regression model.

Course Content

The course focuses on linear regression models for cross-sectional data. In Period 1 of the course, we study the simple linear regression model using standard notation (specifying quantities per cross-sectional unit). We deviate from this in Period 2 and study the multiple linear regression model in matrix form, which leads to compact formulas for estimators and tests statistics. We cover the following topics throughout the course:

- Estimation: ordinary least squares, weighted least squares and maximum likelihood
- Assumptions on the linear regression model (why are they important, how could we check/test their validity)
- Inference: hypothesis and diagnostic testing using t-tests and F-tests, confidence intervals
- Finite-sample and asymptotic properties of estimators and tests
- Prediction: making point predictions and setting up prediction intervals

Additional Information Teaching Methods

2 x 2 hours of classes per week: one lecture and one tutorial.

Method of Assessment

Individual assignment - Individual assessment (part 1)
Intermediate exam – Individual assessment (part 1)
Group assignment - Group assessment (part 2)
Final exam – Individual assessment (part 2)

Literature

The mandatory literature for this course is given below.

Period 1

- J.H. Stock and M.W. Watson (2019). Introduction to Econometrics. 4th edition. (The 3rd updated edition of 2015 is also fine).

Period 2

- J.R. Magnus (2017). Introduction to the Theory of Econometrics. VU University Press. (From sixth printing onwards, the book has video links).
- J.R. Magnus and S. Telg (2021). Mastering Econometrics: Exercises and Solutions. VU University Press.

Additional Information

Please note that this course is part of an entry requirement for Integrative Practical (part of BSc Econometrics and Operations Research) and Data Science Practical (part of BSc Econometrics and Data Science).

Recommended background knowledge

Linear Algebra, Analysis I & II, Statistics