

MODULE SPECIFICATION • ELECTIVE

Econometrics of Program Evaluation

This course provides participants with the essential tools, both theoretical and applied, for a proper use of modern microeconomic methods for policy evaluation and causal counterfactual modelling. The course covers various approaches, namely: Regression Adjustment (parametric and nonparametric), Matching (on covariates and on propensity score), Reweighting and Double-robust methods, Selection models, Instrumental-variables approaches, Difference-in-Differences, and Regression Discontinuity Design.

10	15h	85h	100h
CREDITS	CONTACT HOURS	PRIVATE STUDY	TOTAL STUDY

COURSE CONVENOR

NAME Dr Mathieu Lefebvre

OFFICE By appointment — please email to arrange a convenient time

COURSE STRUCTURE

Econ 7913 is a 10-credit course and students are expected to input approximately 100 hours of study. The total number of contact hours is 15 hours, leaving 85 hours for private study. Delivery is by lectures — 15 hours across the first three weeks of term, comprising 10 hours of lectures and 5 hours of tutorials. Optional clinics run on the last day of the course.

Prerequisite. Completion of Microeconometrics and Panel Data Econometrics (ECON 7903) is a prerequisite for taking this module.

During private study, balance the course material (the primary source) against the recommended textbooks: think critically about how these fit into the body of knowledge, perform the exercises, complete coursework and revise. You can expect to perform well only by working consistently through the year.

MODULE PROGRAMME

LECT.	TOPIC	SESSION CONTENT
01	Introduction to the Econometrics of Program Evaluation I	— Econometrics of program evaluation: statistical background — Experimental and non-experimental design — The selection problem: observable and unobservable selection
02	Introduction to the Econometrics of Program Evaluation II	— Assumptions and notation — Regression Adjustment (parametric and nonparametric) — Control-function regression
03	Applications using Stata I	— Use of the Stata 16 treatment-effects estimation package teffects — Presentation of DO-files and ADO-files provided by the lecturer
04	Applications using Stata II	— Application on real data of teffects subcommands — Extensions by Stata user-written commands: ivtreatreg, treatrew
05	Matching Estimator	— Matching estimator: covariate and propensity score method
06	Reweighting and Double-Robust Estimator	— Reweighting estimator — Double-robust estimator — Summary of methods
07	Applications using Stata I	— Use of the Stata 15 treatment-effects estimation package teffects — Presentation of DO-files and ADO-files provided by the lecturer
08	Applications using Stata II (1.5 hours)	— Application on real data of teffects subcommands — Extensions by Stata user-written commands: pscore, psmatch2, treatrew — Summary of program evaluation under “observable selection”
09	Econometrics of Program Evaluation under “Selection on Unobservables” I	— Statistical background: the endogeneity problem — Assumptions and notation — Selection models (Heckit)
10	Econometrics of Program Evaluation under “Selection on Unobservables” II	— Instrumental variables approaches (IV) and LATE — Difference-in-differences (DID) — A primer into the Regression discontinuity design (RD)
11	Applications using Stata I	— Use of the Stata 15 treatment-effects estimation package teffects — Presentation of DO-files and ADO-files provided by the lecturer
12	Applications using Stata II	— Application on real data of teffects subcommands — Extensions by Stata user-written commands: ivtreatreg, diff, rd, ted, rdrobust

KEY SKILLS

By the end of this course, students should have some knowledge and understanding of:

- Set up and manage a correct evaluation design, either under observable or unobservable selection
- Identify, collect and organize datasets for a correct ex-post program evaluation

- Understand the theoretical underpinnings of the most widely studied econometric models for program evaluation, using mainly intuitive examples and graphical approaches
- Select the appropriate methods to use and interpret results accordingly
- Read and understand applications from different policy sub-fields, such as finance and banking, the labour market, the investment activities of enterprises, education policy and regional cooperation, and incentives for business research and development

DESIRED OUTCOMES

By the end of this course, students should be able to:

- Engage in abstract thinking by extracting the essential features of complex systems to facilitate problem solving and decision-making
- Communicate and present complex arguments in oral and written form with clarity and succinctness
- Present, interpret and analyse information in numerical form
- Utilise effectively statistical and other packages
- Apply basic statistical techniques to analyse economic and financial datasets
- Work effectively both individually and within a team environment

ASSESSMENT

WEIGHTING	100% coursework
ISSUED	End of week 6
DUE	End of week 10 — four weeks for completion
SUBMISSION	Electronically via the Moodle site for this course
FEEDBACK	Returned within 4 weeks of the deadline, as marker's notes appended to the PDF of your coursework

Marking criteria and penalties are set out in the Economics Undergraduate Handbook and the general course information paper, available via the Current Student page of the university website under Academic Regulations.

COURSE TEXT & RECOMMENDED READING

Book chapters and online material. For the tutorials you will also need access to the OxMetrics system for PcNaive and the Ox statistical programming language; the course also takes a brief look at aspects of R, Python and GNU Octave. Copies of the lecture slides are made available on the course web pages, together with additional material and course announcements.

- Doornik, J. A. (2006). The Role of Simulation in Econometrics. Chapter 22 in Palgrave Handbooks of Econometrics: Vol. 1 Econometric Theory
- Doornik, J. A. and Hendry, D. F. (2001). Interactive Monte Carlo Experimentation in Econometrics Using PcNaive. Timberlake Consultants Press
- Hendry, D. F. (1984). Monte Carlo Experimentation in Econometrics. Handbook of Econometrics, Volume II