

Causal Inference in Microeconometrics with Application to Program Evaluation (X000173)

Due to Covid 19, the education and evaluation methods may vary from the information displayed in the schedules and course details. Any changes will be communicated on Ufora.

Course size	<i>(nominal values; actual values may depend on programme)</i>		
Credits 8.0	Study time 240 h	Contact hrs	60.0 h
Course offerings and teaching methods in academic year 2020-2021			
a (semester 1)	(language of instruction unknown)	Gent	
c (semester 1)	English	lecture	240.0 h
Lecturers in academic year 2020-2021			
Cockx, Bart		EB21	lecturer-in-charge
Offered in the following programmes in 2020-2021			crdts
Courses on Offer by the Doctoral Schools Ghent University			offering
			8
			a

Teaching languages

English

Keywords

Microeconometrics, evaluation methods, causal inference, natural experiments, social experiments (randomized controlled trials), matching, instrumental variables, control function, discontinuity design, duration analysis (based on the "timing of events"), causal machine learning methods.

Position of the course

The identification of causal relationships is one of the central objectives of a researcher in any field of research. In the last two decades, much econometric and statistical research has been realized on the identification and the estimation of causal effects. The objective of the course is to introduce the student to the "state of the art" of causal inference in micro-econometrics. Much of the research on causal inference has been developed in the program evaluation literature, mostly evaluating social or employment programs. This explains why most examples, illustrating the methods covered in this course, are taken from this literature. Nevertheless, it should be stressed that the methods can be applied to any field of economics and are therefore useful to any empirical researcher who is interested in the identification and estimation of causal effects.

Contents

The lectures will take place **online** on **the following 11 Tuesdays** in 2020: **6/10, 13/10, 20/10, 27/10, 3/11, 10/11, 17/11, 24/11, 1/12, 8/12** and **15/12/2020**. Each day will consist in lectures of 3 hours from 11:00 to 12:30 and 14:00 to 15:30. **William Parienté (UCLouvain) will lecture on 24/11, 8/12 and 15/12**. The **date of the exam will later be determined in consultation with the students**.

The course covers methods that have recently become popular in the literature: natural and social experiments, matching, new interpretations of instrumental variable methods, discontinuity design, the "timing of events" methodology in duration analysis, and causal machine learning methods. The heterogeneity of causal effects will be a specific focus.

Special attention will be paid to the practical aspects of an evaluation: access to relevant data, identifying assumptions, estimation and interpretation of results. The course will concentrate more on the use of econometric methods than on their statistical properties, presumed to be known. It will also rather be focused on intuitions, than on

proofs.

Initial competences

Final competences in the course "Advanced Econometrics: Nonlinear Methods" (FHECON01000016) or equivalent. Knowledge of "classical" evaluation methods, such as Heckman selection correction models, standard interpretations of instrumental variables or GMM estimators and fixed effect estimators are prerequisites.

Final competences

At the end of this course the PhD student should have acquired the most recent insights in the evaluation methods and causal inference. This should allow him/her to apply these methods in his/her empirical research and/or to contribute to the scientific literature in this field.

Conditions for credit contract

This course unit cannot be taken via a credit contract

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Lecture, seminar: practical PC room classes

Extra information on the teaching methods

Lectures, reading and group discussions of scientific articles, computer exercises.

Learning materials and price

The course material will consist of slides, scientific articles and will make use of the software Stata® (version 13 or later).

References

The following articles provide an overview of the covered topics:
Blundell, R. and M. Costa Dias (2009), "Alternative Approaches to Evaluation in Empirical Microeconomics", *The Journal of Human Resources*, 44 (3), 565-640.
Imbens, G. W. and J. M. Wooldridge (2009), "Recent Developments in the Econometrics of Program Evaluation", *The Journal of Economic Literature*, 47 (1), 5-86.
Abbring, J. H. and G. J. van den Berg (2004), "Analyzing the effect of dynamically assigned treatments using duration models, binary treatment models, and panel data models", *Empirical Economics*, 29, 5-20.
In addition, a detailed reading list will be provided during the course.

Course content-related study coaching

The teacher will be available for questions regarding the course. Didactical material (slides, scientific articles, exercises, computer programs and datasets) will be posted on the digital learning platform **Ufora** (<https://elosp.ugent.be/welcome>)

Evaluation methods

Examination methods in case of periodic evaluation during the first examination period

Examination methods in case of periodic evaluation during the second examination period

Examination methods in case of permanent evaluation

Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible

Extra information on the examination methods

Permanently: active participation in the discussion and evaluation of home assignments.

End-of-term: Take home written exam consisting in a critical analysis of a scientific article that hasn't been discussed during the lectures **or presentation of empirical research within the student's doctoral project in which one of the methods that are discussed in the lectures are used.** This written exam is complemented by an oral defense and subjected to a discussion with co-students.

Calculation of the examination mark

Combined evaluation: 60% end-of-term evaluation, 40% permanent evaluation

Combined evaluation:
end-of-term evaluation 75 %
permanent evaluation 25 %