

Course syllabus

Causal inference

Summer 2026

Last update: 12.04.2026

Course logistics

This course is an elective in the program BSc Wirtschaftswissenschaften (Economics) at the Department of Economics at Goethe University in Frankfurt am Main. The course builds on the course Econometrics (Economics). Please contact the lecturer prior to enrollment if you have not yet taken that course.

Credits: 6 CP / 2 SWS.

Lecturer: Prof. Dr. Manuel Linsenmeier (linsenmeier@c3s.uni-frankfurt.de); office hours by appointment and on Zoom; please book [here](#).

Class teacher: Samuel Manfredi (manfredi@c3s.uni-frankfurt.de); office hours Wednesday, 10:30 AM.

Time and Location: see [LSF](#)

Additional resources: see [OLAT](#)

Course description

How do economists discern between correlation and causation in empirical analysis? This course offers training in research design and in selected methods used for causal inference in empirical economic research. It builds on the introductory courses in statistics and econometrics and focuses on formulating research questions, designing identification strategies, implementing statistical methods, and critically assessing empirical results. The emphasis is on the intuition of the different methods, their implementation, and the interpretation of the results. The main part of the course covers five methods from the toolkit of modern applied econometrics: matching, instrumental variables, regression discontinuity, difference in differences, and synthetic controls. The lecture is accompanied by a biweekly tutorial in which the methods are practiced in R. The course culminates in a short research proposal that outlines a feasible empirical analysis using one of the methods of the course and discusses its limitations.

Learning goals

- Students can identify research questions that can be answered with applied econometrics and match them with possible research designs.
- Students understand the differences between correlation and causality and can identify possible threats to causality in empirical economic analysis.
- Students can implement a contemporary method of causal inference and critically evaluate and interpret the results.

Course timeline

Week	Date	Topic
1	13.04.	Course Introduction, Econometrics Review, Experiments
2	20.04.	Experiments (<i>Practice session</i>)
3	27.04.	Quasi-Experiments, Project Proposal
4	04.05.	Matching
5	11.05.	Matching (<i>Practice session</i>)
6	18.05.	Instrumental variables
	25.05.	<i>Public holiday</i>
7	01.06.	Instrumental variables (<i>Practice session</i>)
8	08.06.	Regression discontinuity
9	15.06.	Regression discontinuity (<i>Practice session</i>)
10	22.06.	Difference in differences [Project Proposal due on June 26]
11	29.06.	Difference in differences (<i>Practice session</i>)
12	06.07.	Synthetic controls
13	13.07.	Interpretation of results

Assessment

The course is assessed with a project proposal (10-15 pages). The proposal is an opportunity for students to practice the steps of empirical economic research. This includes choosing a problem that they are passionate about, finding a research question that is both relevant and answerable, identifying a possible research design, and critically discussing its feasibility and limitations. Students are not required to carry out any statistical analysis and do not need to provide any evidence towards the feasibility of the proposed analysis.

The proposal should be structured as follows:

- Motivation of focusing on the chosen problem

- Statement of research question
- Graphical analysis with threats to identification (DAG)
- Description of a possible research design
- Data needs and possible data sources
- Discussion of feasibility and limitations

The proposal is due on Friday, June 26, 2026.

Readings

Nick Huntington-Klein (2022) [NHK2022]: The Effect: An Introduction to Research Design and Causality. CRC Press. Online version available at: <https://theeffectbook.net/>.

Scott Cunningham (2021) [SC2021]: Causal Inference: The Mixtape. Yale University Press. Online version available at: <https://mixtape.scunning.com/>.