UNIVERSITÄT
LUZERN

Causal Analysis with R

Tutor	Dr Resul Umit (resul.umit@durham.ac.uk)
Organization	Digital Skills, University of Lucerne
Language	English
ECTS-Points	3
Contact	lumacss@unilu.ch
Dates and time	Friday, 8 May 2026, 9.15 a.m. to 4.30 p.m. – in-person, room 3.A05 Saturday, 9 May 2026, 9.15 a.m. to 4.30 p.m. – in-person, room 3.A05 Friday, 15 May 2026, 9.15 a.m. to 4.30 p.m. – online Saturday, 16 May 2026, 9.15 a.m. to 4.30 p.m. – online Friday, 22 May 2026, 9.15 a.m. to 4.30 p.m. – online Saturday, 23 May 2026, 9.15 a.m. to 4.30 p.m. – online
Content	This course is an introduction to causal inference in the social sciences, with hands-on implementation in R. We will start with the core frameworks: counterfactual reasoning, directed acyclic graphs (DAGs), and the logic of causal inference. You will develop a common language for discussing identification, assumptions, and causal effects. We will then cover empirical research designs that provide statistical solutions to the fundamental problem of causal inferencece: regressions, experiments, regression discontinuity designs, difference-in-differences, and instrumental variables. For each design, we will examine the assumptions and identifying conditions, then implement them in R. We will also examine published studies to see how other researchers apply these designs and communicate their findings.

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	You will work through coding exercises with real-world data, learn to diagnose threats to identification, and develop skills in interpreting and presenting results. This will give you a foundation for conducting these analyses independently in your own research. Most datasets and examples in the course come from political science, but the concepts and methods apply across the social sciences.
Prerequisites/ Materials	Participants should have basic knowledge of the R programming language, such as working with data frames and basic functions. Pre-course guidance and materials will be circulated beforehand to help participants get ready for the workshop. Assistance with technical setup will be available before and during the course to ensure that all participants can work smoothly with R on their own devices.
Teaching Method	The course is delivered through a combination of short lectures and practical sessions. Each causal design is introduced through conceptual discussion and illustrated with examples from academic publications, followed by demonstrations and coding exercises that allow participants to apply the methods directly.