

IWH-DPE/CGDE First-Year Course

Econometrics

Work load: 150 hours / 6 ECTS

Lecture: Bi-weekly, 15 x 90 minutes / in person at IWH

Begin: 10.10.2022

Time: Mondays (Week 2 and 3: Tuesday) 09:30–11:00 and 11:30–13:00

I. Introduction (Day 1)

1. Review of Linear Models and Asymptotic Theory

Date: 10.10.2022

Time: 09:30–11:30

Lecturer: Dr André Diegmann, IWH

II. Multivariate Kernel Regression and Finite-Sample Inference (Day 2 and Day 3)

2. Introduction to Nonparametric Models

Date: 25.10.2022

Lecturer: Jordan Adamson, PhD, University of Leipzig

3. Introduction to Nonparametric Inference

Date: 08.11.2022

Lecturer: Jordan Adamson, PhD, University of Leipzig

III. Causal Inference (Day 4 and Day 5)

4. Instrumental Variables

5. Regression Discontinuity

Date: 21.11.2022

Lecturer: Dr Matthias Mertens, IWH

6. Matching

Date: 05.12.2022 (via Zoom)

Time: 09:30–11:00

Lecturer: Professor Xiang Li, PhD, IWH and Martin Luther University Halle-Wittenberg

7. Differences-in-Differences

Date: 09.12.2022 (via Zoom)

Time: 13:30–15:00

Lecturer: Professor Dr Felix Noth, IWH and Otto von Guericke University Magdeburg

IV. Time Series (Day 6 and Day 7)

8. Time Series I

Date: 19.12.2022

Lecturer: Professor Dr Malte Rieth, Martin Luther University Halle-Wittenberg

9. Time Series II

Date: 09.01.2023

Lecturer: Professor Dr Malte Rieth, Martin Luther University Halle-Wittenberg

V. Special Topics (Day 8)

10. Empirical Methods in Lab and Field Experiments

Date: 23.01.2023

Time: 09:30–11:00

Lecturer: Professor Dr Sabrina Jeworrek, IWH and Otto von Guericke University Magdeburg

11. Machine Learning Methods for Economics and Finance

Date: 23.01.2023

Time: 11:30–13:00

Lecturer: Professor Dr Melina Ludolph, IWH and Otto von Guericke University Magdeburg

Venue

Halle Institute for Economic Research (IWH) – Member of the Leibniz Association, Kleine Maerkerstrasse 8, 06108 Halle (Saale), conference room (ground floor). In case of tightened COVID-19 regulations, parts of the course may take place online via Zoom.

Problem sets

There will be eight assignments throughout the term. At the end of each day, the lecturer will post assignments, which are due on the day before the next lecture (11.59 pm). In order to complete the course, six problem sets (at least one from every block indicated by Roman numbers) will have to be successfully passed.

Selected Literature

Althey, S.; Imbens, G. W. (2019): Machine Learning Methods that Economists Should Know About. *Annual Review of Economics* 11, 685-729.

Angrist, J. D.; Pischke, J.-S. (2015): *Mastering Metrics*. Princeton University Press.

Angrist, J. D.; Pischke, J.-S. (2009): *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton University Press.

Cameron, A.C.; Trivedi, P.K. (2005): *Microeconometrics, Methods and Applications*, Cambridge University Press.

Gelman, A.; Carlin, J. B.; Stern, H. S.; Dunson, D. B.; Vehtari, A.; Rubin, D. B. (2013): *Bayesian Data Analysis, Third Edition*. Chapman & Hall/CRC Press.

Greene, W.H. (2017): *Econometric Analysis, 8th edition*, Pearson.

Imbens, G. W.; Rubin, D. B. (2015): *Causal Inference for Statistics, Social, and Biomedical Sciences: An Introduction*. Cambridge University Press.

Kilian, L.; Lütkepohl, H. (2017): *Structural Vector Autoregressive Analysis*, Cambridge University Press, 2017.

McElreath, R. (2020): *Statistical Rethinking. A Bayesian Course with Examples in R and Stan*. Chapman & Hall/CRC Press.

Winkelmann, R.; Boes, S. (2006): *Analysis of Microdata*. Springer.

Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data*. MIT press.

Additional lecture-specific literature will be announced separately.