# 31E00910
# Applied Microeconometrics I
# Fall 2022

**This version: August 19, 2021**

| Instructors contact information | Course information |
|---|---|
| Instructor: Tuomas Pekkarinen<br>E-mail: tuomas.pekkarinen@aalto.fi<br>Office: Economicum, D-309<br>Teaching assistant: Atte Pudas | MSc in Economics, Aalto University<br>Locations:<br>Language of Instruction: English<br>Course Website:<br>https://mycourses.aalto.fi/course/view.php?id=37346 |

## 1. OVERVIEW

The course introduces students to the main empirical strategies for causal inference. It has a practical flavor, emphasis is not on proofs but on intuitions and on applications. The course covers identification based on observables, randomized control trials, difference-in-differences, instrumental variables and regression discontinuity design. The students will also use econometric software in the analysis of data and estimations.

## 2. PREREQUISITES

Empirical Methods for Economists (31C01200), Econometrics (30C00200) or Capstone course Econometrics and Data Analysis (31C99904)

## 3. ASSESSMENT AND GRADING

There will be five graded problem sets. The final grade will be based on these problem sets (50%), and a final exam (50%). To pass the course a passing grade in the exam is required.

## 4. READINGS

Many of the topics that will be discussed in the course are addressed in the following textbooks:

Angrist, Joshua D. and Jörn-Steffen Pischke (2014), “Mastering ‘Metrics’: The Path from Cause to Effect,” Princeton, NJ: Princeton University Press.

Angrist, Joshua D. and Jörn-Steffen Pischke (2009), “Mostly harmless econometrics: An empiricist’s companion,” Princeton, NJ: Princeton University Press.

In addition to that, in each lecture we will also discuss particular academic papers, which will be listed in the lecture slides. All material will be posted at the Course Web Page.

## 5. TENTATIVE SCHEDULE

Please note that the dates on which the material will be covered are approximate. Topics may take more or less time than I anticipate. Problem sets will involve the use of some statistical package. If you are not familiar with Stata or R, you may want to attend any of the two tutorials that will be offered the first and second week. It is up to you whether you want to use either Stata or R or some other statistical software. Aalto students should have access to STATA either via VPN or be able to install it. Students from other universities should contact their IT services to find out which statistical software they have access to.

| Session | Date | Topic | Assignments Due Date |
|---|---|---|---|
| 1 | Mon 05/09; 15:15* | Introduction | |
| 2 | Wed 07/09; 16:15 | **Introduction to STATA** | |
| 3 | Mon 12/09; 15:15* | Randomized Controlled Trials | PS1: Fri 16/09, 22:00 |
| 4 | Tue 13/09; 12:15 | Randomized Controlled Trials | |
| 5 | Wed 14/09; 16:15 | **Introduction to R** | |
| 6 | Thu 15/09; 12:15 | Regression based on observables | PS2: Fri 23/09, 22:00 |
| 7 | Tue 20/09; 12:15 | Regression based on observables | |
| 9 | Wed 21/09; 16:15 | **Problem set 1** | |
| 10 | Thu 22/09; 12:15 | Regression based on observables | PS3: Fri 30/09, 22:00 |
| 11 | Tue 28/09; 12:15 | Instrumental variables | |
| 12 | Wed 29/09; 16:15 | **Problem set 2** | |
| 13 | Thu 30/09; 12:15 | Instrumental variables | PS4: Fri 07/10, 22:00 |
| 14 | Tue 04/10; 12:15 | Differences in differences | |
| 15 | Wed 05/10; 16:15 | **Problem set 3** | |
| 16 | Thu 06/10; 12:15 | Differences in differences | PS5: Fri 14/10, 22:00 |
| 17 | Tue 11/10; 12:15 | Regression discontinuity design | |
| 18 | Wed 12/10; 16:15* | **Problem set 4** | |
| 19 | Thu 13/10; 13:15* | Regression discontinuity design | |

**Notes: * denotes exceptional time schedule**

## 4. ETHICAL RULES

Aalto University Code of Academic Integrity and Handling Thereof:
https://into.aalto.fi/pages/viewpage.action?pageId=3772443

**Papers covered in the course by topic (NOTE: This list will be updated during the course)**

**1. Introduction**

Solon, G., (1992): “Intergenerational mobility in the United States”, *The American Economic Review*, 82 (3), 393-408.
Gentzkow, M., Shapiro, J. M, and M. Taddy, (2019): “Measuring group differences in high-dimensional choices: Method and application to congressional speech”, Econometrica, 87 (4), 1307-1340.
Holland, P. W. (1986): “Statistics and causal inference”, *Journal of the American Statistical Association*, 81 (396), 945-960.

**2. Randomized experiments**

Zinovyeva, N. and M. Bagues, (2017): “The role of connections in academic promotions”, *American Economic Journal: Applied Economics*, 7 (2), 264-292.
Bertrand, M. and S. Mullainathan, (2004): “Are Emily and Greg more employable than Lakisha and Jamal? A field experiment on labor market discrimination”, *American Economic Review*, 94 (4), 991-1013.
Krueger, A. B., (1999): “Experimental estimates of education production functions”, *The Quarterly Journal of Economics*, 114 (2), 497-532.
Enikolopov, R., Korovkin, V., Petrova, M., Sonin, K. and A. Zakharov, (2013): ”Field experiment estimates of electoral fraud in Russian parliamentary elections”, *PNAS*, 110 (2), 448-452.
Bloom, H. S., (1995): “Minimum detectable effects: A simple way to report the statistical power of experimental designs”, *Evaluation Review*, 19 (5), 547-556.

**3. Identification based on observables**

Pei, Z., Pischke, J-S., and H. Schwandt, (2019): “Poorly measured confounders are more useful on the left than on the right”, *Journal of Business & Economic Statistics*, 37 (2), 205-216.
Dale, S. B. and A. B. Krueger, (2002): “Estimating the payoff to attending a more selective college: An application of selection on observables and unobservables”, *The Quarterly Journal of Economics*, 117 (4), 1491-1527.

**4. Instrumental variables**

Angrist, J. D., Imbens, G. W., and D. B. Rubin, (1996): “Identification of causal effects using instrumental variables”, *Journal of the American Statistical Association*, 91 (434), 444-455.
Angrist, J. D., Dynarski, S. M., Kane, T. J., Pathak, P. A., and C. R. Walters, (2011): “Who benefits from KIPP?”, IZA Discussion Paper 5690.
Angrist, J. D., (2006): “Instrumental variable methods in experimental criminological research: What, why, and how”, *Journal of Experimental Criminology*, 2, 23-44.
Angrist, J. D. and A. B. Krueger, (1991): ”Does compulsory schooling attendance affect schooling and earnings?”, *The Quarterly Journal of Economics*, 106 (4), 979-1014.
Angrist, J. D. and W. N. Evans, (1998): “Children and their parents’ labor supply: Evidence from exogenous variation in family size”, *American Economic Review*, 88 (3), 450-477.
Lundborg, P., Plug, E. and A. W. Rasmussen, (2017): ”Can women have children and a career? IV evidence from IVF treatments”, *American Economic Review*, 107 (6), 1611-37.

**5. Differences in differences**

Kadar, N. (2019): “Rediscovering Ignaz Phillip Semmelweiss (1818-1865)”, *American Journal of Obstetrics and Gynecology*, 220 (1), 26-39.
Donohue, J. J. and J. Wolfers, (2006): “Uses and abuses of empirical evidence in the death penalty debate”, NBER Working Paper No. 11982.

Card, D. and A. B. Krueger, (1994): “Minimum wages and employment: A case study of the fast-food industry in New Jersey and Pennsylvania”, *American Economic Review*, 84 (4), 772-793.
Cengiz, D., Dube, A., Lindner, A. and B. Zipperer, (2019): “The effect of minimum wages on low-wage jobs”, *The Quarterly Journal of Economics,* 134 (3), 1495-1454.
Ashenfelter, O. and C. Rouse, (1998): “Income, schooling, and ability: Evidence from a new sample of identical twins”, *The Quarterly Journal of Economics*, 113 (1), 253-284.

**6. Regression discontinuity**

Lee, D.S. and T. Lemieux, (2010): “Regression discontinuity designs in economics”, *Journal of Economic Literature*, 48 (2), 281-355.
Carpenter, C. and C. Dobkin, (2009): “The effect of alcohol consumption on mortality: Regression discontinuity evidence from the minimum drinking age”, *American Economic Journal: Applied Economics*, 1 (1), 164-182.
Lee, D. S., (2008): “Randomized experiments from non-random selection in U.S house election”, *Journal of Econometrics*, 142 (2), 675-697.
Abdulkadiroglu, A., Angrist, J., and P. Pathak, (2014): “The elite illusion: Achievement effects at Boston and New York exam school”, *Econometrica*, 82 (1), 137-196.
Silliman, M. and H. Virtanen, (2021): ”Labor market returns to vocational secondary education”, *American Economic Journal: Applied Economics*, forthcoming.
Sarvimäki, M. and K. Hämäläinen, (2016): ”Integrating immigrants: The impact of restructuring active labor market programs”, *Journal of Labor Economics*, 34 (2), 479-508.

**7. Example of structural estimation**

Duflo, E., Hanna, R., and S. P. Ryan, (2012): “Incentives work: Getting teachers to come to school”, *American Economic Review*, 102 (4), 1241-1278.