Teachers: Dr. Prottoy Akbar & Dr. Miri Stryjan, teaching assistant (TA): Martta Rautala
Period 3: 08.01 – 16.02, 2024

Course components	Time	Classroom
12 Lectures:	Mondays 14.15-16.00 Wednesdays 14.15-16.00	Otakaari 1, U141 (U3)
4 Exercise sessions:	Thursdays 9.15-11.00	Otakaari 1, U351 (Win) computer lab
Exam	Friday 23.02.2024 13.00-16.00	U157
Retake exam	Friday 26.04.2024 14.00-17.00	U157

Course description and learning objectives

This course provides an introduction to data analysis in applied microeconomics. We have designed it to complement the First Course in Probability and Statistics (MS-A0503) or equivalent introductory course in statistics. Our aim is to give a non-technical and intuitive overview of the modern microeconometric approaches with a particular focus on critically evaluating alternative data sources and research designs. At the end of this course, you:

- Can critically evaluate the data needs and the data used for a given empirical question.
- Can describe and interpret data in a meaningful way, linking it to questions of interest and to economic theory.
- Understand the concept of causality and the basic principles of randomized control trials.
- Can interpret and critically evaluate the economic and statistical significance of the results of an empirical analysis.
- Are familiar with the basics of the most important methods for estimating causal effects using data from quasi-natural experiments.

Course homepage: *https://mycourses.aalto.fi/course/view.php?id=38608*

Course evaluation

The examination and final grade are based on 3 components:

- <u>Homework assignments (HW) (40% of final grade):</u> There will be five homework assignments, where students will practice and demonstrate skills learned in the course. Note that homework 5 is due after the exam. Late submissions will only be accepted for documented medical (or equivalent) reason, verified by Aalto HR.
- <u>Pre-class assignments (10% of final grade, pass/fail):</u> In order to facilitate discussion in class, we will ask students to turn in short assignment before the start of some lectures. Since the goal of these assignments is to help students prepare for the lectures, late submissions will not be accepted under *any* circumstances. On the other hand, the two lowest scored pre-class assignments of each student will not count towards their final grade.
- <u>In-class worksheets (5% of final grade, pass/fail):</u> During some lectures, we will together go through a worksheet of exercises that are due for submission at the beginning of the next lecture. Note that these can be completed either in class or after class. Once again, late submissions will not be accepted under *any* circumstances, but the two lowest scored in-class worksheets of each student will not be counted towards their final grade.
- <u>Final Exam (45% of final grade):</u> The exam and the retake exam will be given on site in Otaniemi. A separate registration is required for the Retake exam. **NOTE: A passing grade on the course requires a passing score on the exam.**

- **Bonus points for active attendance (up to 5% of final grade)** Students who generate the highest positive externality for others through their engagement in the classroom or online will be awarded up to 5% of the maximum total grade as extra credits.

Outside references

Outstanding textbooks covering most of the course's material include the modern classic [Mastering 'Metrics](#) by Josh Angrist and Steve Pischke and the new (and free) [Causal Inference: The Mixtape](#) by Scott Cunningham. The overlap is not perfect: we will cover material that is not discussed in these books and quite a bit of the books' material will be left for later courses. The exam will be based solely on material covered in class, assignments and exercises.

Course schedule (tentative)

Part 1: Data, descriptive statistics and causality <u>Teacher: Prottoy A. Akbar</u>	Mon 08.01.24	**Lecture 1:** Introduction to data
	Wed 10.01.24	**Lecture 2:** Samples and descriptive statistics
	Thu 11.01.24	Exercise session 1
	Mon 15.01.24	**Lecture 3:** Conditional descriptive statistics
	Wed 17.01.24	**Lecture 4:** Causality and research design, **Homework 1 due**
	Thu 18.01.24	Exercise session 2
	Mon 22.01.24	**Lecture 5:** Statistical inference and randomization
	Wed 24.01.24	**Lecture 6:** Testing errors and observed data **Homework 2 due**
	Thu 25.01.24	Exercise session 3
Part 2: Quasi experimental methods <u>Teacher: Miri Stryjan</u>	Mon 29.01.24:	**Lecture 7:** Observational data and quasi experimental methods: introduction & case study
	Wed 31.01.24	**Lecture 8:** Difference-in-Differences **Homework 3 due**
	Mon 05.02.24	**Lecture 9:** Difference-in-Differences continued, Regression Discontinuity Designs
	Wed 07.02.24	**Lecture 10:** Regression Discontinuity Designs
	Thu 08.02.24	Exercise session 4
	Mon 12.02.24	**Lecture 11:** Compliance and Instrumental Variables (IV)
	Wed 14.02.24	**Lecture 12:** Instrumental Variables (IV) continued **Homework 4 due**
	Thu 15.02.24	Exercise session 5
	Fri 23.02.24	EXAM
	Fri 01.03.24	Homework 5 due

Other course policies

Disability information: If you have a disability that requires special testing accommodations or other classroom modifications, you need to notify the instructor no later than the first week of the course period. You may be asked to provide documentation of your disability to determine the appropriateness of accommodations.
See https://www.aalto.fi/en/services/individual-study-arrangements for more information!

Classroom recording: To ensure the free and open discussion of ideas, students *may not* record classroom lectures, discussion and/or activities without the advance written permission of the instructor, and any such recording properly approved in advance can be used solely for the student's own private use.