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# Syllabus

## ECONOMETRICS 1 - PART 1

### 4th Quarter 2023

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#### Contact

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#### Location and times

Tue, Thu, 9am-11am

#### TA sessions

Igor de Araujo Brito, TBD, [igor368@gmail.com](mailto:igor368@gmail.com)

#### Course objectives and learning goals

This class is a graduate-level course that aims to equip students with working knowledge of econometric methods that are used in economic research. Topics in Part 1 include GMM, nonparametric methods, numerical optimization, simulation-based methods, and discrete choice estimation. Part 2 will be taught by Andrea Flores.

#### Software

The programming language used in this class will be R, and we will handle collaborative work with Github.

# Academic integrity policy

All students must act with honesty and integrity. Academic dishonesty includes **engaging or attempting to engage** in the following: (1) Academic deceit, defined as any deceptive or fraudulent act that creates or attempts to create an advantage or disadvantage for any member of the academic community. (2) Relying on the aid of others, including other students, tutors, or for-hire agents, in connection with any academic evaluation to the extent that the work is not representative of the student's abilities. (3) Claiming credit for or submitting work done by another or through the unauthorized use of technology. (Adapted from: <https://provost.asu.edu/academic-integrity/policy>)

## Grading

Grade components:

- two problem sets, (20%, 20%)
- replication project, (30%)
- exam, (30%)

## Problem sets

- A missing problem set will be graded with 0 points.
- You can submit problem sets in groups of 3. (No groups of 4, do not insist)
- Problem sets should be submitted as Rmarkdown reports.
- Regarding the practical parts
  - The practical parts should be written as R code, integrated in your Rmarkdown report.
  - Create your own folder in the class Github.
  - 10 minutes before class starts, sync your Github to make sure it is current. Then post your solution to your project folder in Github and publish.
  - Sync .R code and .txt files to github, keep your own (large) datasets in subfolder /data/ which is git-ignored.

## Replication project

- Your task is to choose a paper and replicate all relevant figures and tables in the paper
- Browse through journals JAERE, JDE, AEJ Applied, or similar. Select an article of your interest published 2015 or later. Confirm your choice with me. (Papers replicated in previous years of this class are not eligible).
- For the replication project, you can form groups of up to 3
- Your grade for the replication project will be a function of
  - the clarity of the replication code and report
  - the distance between the tables and figures in the paper versus in your report
  - the presentation of the replication
  - the degree of difficulty of the paper
- TA Igor will meet with each group to verify that the group's code works and produces the presented results
- **Confirm by 17.10.2024 that you are able to replicate the summary statistics!**

## Participation and absence

Participation in class is highly encouraged. However, there will be no participation credit. I will not take attendance, however, excessive absence may result in grade reduction. Exception: Attendance is **required** for the replication presentations.

## Textbooks

- Hansen 2019, Econometrics
- Cameron and Trivedi 2005, Microeconometrics

## Tentative course outline

Date	Topic	To Dos
Tu, 01.10. Th, 03.10.	GMM GMM	
Tu, 08.10. Th, 10.10.	Kernel density and estimation Numerical optimization	Post problem set 1
Tu, 15.10. Th, 17.10.	- <i>Holiday</i> - Bootstrap	Problem set 1 due Confirm replication sum stats
Tu, 22.10. Th, 24.10.	Discrete choice Time series	Post problem set 2
Tu, 29.10. Th, 31.10.	Present replications Present replications	Problem set 2 due

## Literature on discrete choice

- McFadden (1974). The Measurement of Urban Travel Demand. *Journal of Public Economics*
- Rust (1987). Optimal Replacement of GMC Bus Engines: An Empirical Model of Harold Zurcher. *Econometrica*
- Berry (1994). Estimating Discrete-Choice Models of Product Differentiation. *RAND Journal of Economics*
- Berry, Levinsohn, Pakes (1995). Automobile Prices in Market Equilibrium. *Econometrica*
- Nevo (2000). A Practitioner's Guide to Estimation of Random Coefficients Logit Models of Demand. *Journal of Economics and Management Strategy*
- Manski (2001). Daniel McFadden and the Econometric Analysis of Discrete Choice. *Scandinavian Journal of Economics*
- Textbook: Cameron, Trivedi. *Microeconometrics: Methods and Application*
- Textbook: Train, *Discrete Choice Methods with Simulation*
- Kennan, Walker (2011). The Effect of Expected Income on Individual Migration Decisions. *Econometrica*
- Matejka, McKay (2015). Rational Inattention to Discrete Choices: A New Foundation for the Multinomial Logit Model. *American Economic Review*
- Dorsey, Langer, McRae (2022). Fueling Alternatives: Gas Station Choice and the Implications for Electric Charging. NBER Working Paper 29831