Econometrics I (PhD, ECON-GA 2100), Second Half
Fall 2025
Course Syllabus

Instructor:	Konrad Menzel	**TA:**	Matias Guizzo-Altube
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	19 W4 St, Room 810		TBA
Office hours:	Th 11:30-12:30		TBA

Lecture:	T 12:30-2:30pm, Th 2:15-4:15pm 19 W4th St, room 517
Recitation:	F 3:00-5:00pm, 19 W4th St, room 517
Course Website:	problem sets and supplemental notes will be posted on Brightspace

Course Description: This part of the course covers the theory of estimation and inference for regression models, including instrumental variables, and panel data. We will also discuss the bootstrap and quantile models.

Literature: The recommended texts for Econometrics I are:

- Hansen, B. (2022): *Econometrics*, Princeton University Press
- Wooldridge, J. (2002): *Econometric Analysis of Cross Section and Panel Data*, MIT Press
- Ruud, P. (2000): An Introduction to Classical Econometric Theory, Oxford
- Hayashi, F. (2000): *Econometrics*, Princeton

For each topic, the corresponding chapters in Hansen's textbook will be given in class. These will be supplemented by lecture notes on selected topics, which will be posted on Brightspace.

Requirements and Grading: The grade for the second half of this class will be based on bi-weekly problem sets (30 percent) and a final exam (70 percent). The exam will be during final exam week (time and location TBD) and will be non-cumulative. Problem sets contain computational and simulation exercises which can be done with Matlab.

Course Outline and Schedule: Below a rough outline of topics for the second half of the course with the corresponding chapters from Hansen (**H**) and additional references.

0. Introduction

1. Conditional Expectations and Linear Prediction (**H** 2)

A. Linear Regression

2. Least-Squares Regression (**H** 3)
3. Finite Sample Statistical Theory of LS (**H** 4)
4. Restricted Estimation and Hypothesis Tests (**H** 8,9)
5. Large Sample Statistical Theory of LS, Bootstrap (**H** 6,7,10, notes)

- *Tibshirani, R. (1996): Regression Shrinkage and Selection via the Lasso, Journal of the Royal Statistical Society B 58(1), 267-288*
- *White, H. (1982): Maximum Likelihood Estimation of Misspecified Models, Econometrica 50(1), 1-25*

B. Instrumental Variables

6. Nonorthogonality of Regressors and Errors (**H** 12.1-6)

- *Aydemir, A., and G. Borjas (2011): Attenuation Bias in Measuring the Wage Impact of Immigration, Journal of Labor Economics 29(1), 69-112*

7. Two-Stage Least Squares and General IV estimation (**H** 12.7-12,16-33)

- *Blundell, R., and J. Powell (2003): Endogeneity in Nonparametric and Semiparametric Regression Models, in: Dewatripont, Hansen, and Turnovsky (eds.): Advances in Economics and Econometrics, Theory and Applications, Eighth World Congress, Volume II, Econometric Society Monographs Series, Cambridge University Press*

8. Weak Instruments (**H** 12.22,35-41, notes)

- *Hahn, J., and J. Hausman (2003): Weak Instruments: Diagnosis and Cures in Empirical Econometrics, American Economic Review (P&P), 93(2), 118-125*
- *Hirano, K., and J. Porter (2015): Location Properties of Point Estimators in Linear Instrumental Variables and Related Models, Econometric Reviews 34, 720-733*

9. Treatment Response Models (**H** 12.34, notes)

- *Abadie, A. (2003): Semiparametric Instrumental Variable Estimation of Treatment Response Models, Journal of Econometrics 113, 231-263*

- *Angrist, J., G. Imbens, and D. Rubin (1996): Identification of Causal Effects Using Instrumental Variables, Journal of the American Statistical Association 434, 444-455*

C. Panel Data

9. Random and Fixed Effects Models (**H** 17)

- *Athey, S., and G. Imbens (2006): Identification and Inference in Nonlinear Difference-in-Differences Models, Econometrica 74(2), 431-497*
- *Stock, J., and M. Watson (2008): Heteroskedasticity-Robust Standard Errors for Fixed Effects Panel Data Regression, Econometrica 76(1), 155–174*
- *Townsend, R. (1994): Risk and Insurance in Village India, Econometrica 62(3), 539-591*

D. Quantile Regression (time permitting)

10. Quantile Regression (**H** 24, notes)

- *Powell, J. (1984): Least absolute deviations estimation for the censored regression model, Journal of Econometrics 25 (1984) 303-325*
- *Chernozhukov, V., and C. Hansen (2005): Instrumental Quantile Regression Inference for Structural and Treatment Effect Models, Journal of Econometrics 132, 491–525*