1 Contact information

My contact information is as follows:

- **Office:** Social Sciences 240.
- **E-mail:** federico.bugni@duke.edu.
- **Homepage:** http://www.econ.duke.edu/~fb32.
- **Office hours:** M,W 9:00 am – 10:00 am and by appointment.

2 Class time and place

- **Lectures:** M,W 10:05 am – 11:20 am in Social Sciences 113.
- **Course website:** https://sakai.duke.edu/portal.

3 Course Description

Econ 883.06 is the second part of the third course in the graduate sequence in econometrics. The goal of this course is to study central results and contributions in (a) nonparametric estimation and (b) semiparametric estimation in econometrics.

In the nonparametric portion of the course, we focus on the kernel-based estimation methods. We cover the main results in estimation, hypothesis testing, and asymptotic properties. We consider nonparametric estimation of density, mean regression model, and additive separable mean regression model. These results in nonparametric estimation are a fundamental building block for semiparametric estimation.

In the semiparametric portion of the course, we study several classical papers in semiparametric econometrics. For each reference, we study the central ideas behind identification, estimation, inference, and asymptotic properties. We also discuss the concept of semiparametric efficiency. We consider partially linear model, semiparametric index model, and binary response model.

4 Grading scheme

- The final course grade is the result of problem sets (40%) and a take-home final exam (60%).
- **Final exam:** 24 hour take-home exam: Monday, December 18, 9 am – Tuesday, December 19, 9 am.

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1Sieve-based estimation methods is the exclusive topic of a future course in the sequence.
5 Problems sets

- There will be a problem set (approximately) every other week. Solutions to the problem sets will be distributed after the due date.
- You are encouraged to work on the problems sets in groups, but individual solutions sets are required.
- The problem sets will contain both theoretical and empirical questions. You are free to use any statistical/econometric software available for empirical questions.

6 Overview of the course

1. Introduction to nonparametric estimation (1 lecture).
   - Main: Chen (2007) and (Horowitz, 2009, Chapter 1).

2. Nonparametric density estimator: kernels (2 lectures).
   - Main: Pagan and Ullah (1999), Li and Racine (2007), and (Horowitz, 2009, Appendix A).


4. Nonparametric additive separable model (1.5 lectures).

5. Introduction to semiparametric estimation (0.5 lectures).
   - Main: Li and Racine (2007) and (Horowitz, 2009, Chapter 2).

6. Partially linear model (1.5 lectures).
   - Main: Robinson (1988) and (Horowitz, 2009, Chapter 3).

7. Semiparametric single index models (2.5 lectures).
   - Main: Han (1987), Powell et al. (1989), Ichimura (1993), and (Horowitz, 2009, Chapter 2).

8. Binary response models (3 lectures).
7 Some final remarks.

- This plan (structure of the course, dates, problem sets, required readings, etc.) is subject to revisions.
- Class participation is considered mandatory.

References


