Collegio Carlo Alberto

Master in Economics and Allievi Programs

Econometric Theory I

Fall 2009

Instructor: Aleksey Tetenov

Contact information

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Class hours: TBA
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Course description

The course material covers two main areas. 1) the mathematical tools (probability and mathematical statistics) that are used in studying modern econometric techniques, as well as in other areas of economic theory. 2) an introduction to the issues of identification in econometrics.

Grades

Final course grades will be determined based on three components

Weekly homework (40%). You are encouraged to work in small groups (2-4 students) and to submit one set of solutions from each group. Late solutions will not count towards the grade, but you should turn them in to get feedback.

Midterm exam (30%).

Final exam (30%). The final exam will cover all topics studied in the course.

Textbooks

There is no required textbook for the course. Lecture notes and assigned readings will be distributed in class.

TOPICS

1. Probability theory
   - Probability spaces, random variables.
   - Expectation and integral.
   - Conditional probabilities and distributions.

2. Identification
   - Identifying treatment effects in observational studies and randomized experiments.
   - Local average treatment effects.
   - Identification with missing data.

3. Large sample theory
    - Modes and calculus of convergence.
    - Laws of large numbers.
    - Characteristic functions.
    - Central limit theorems.

4. Ordinary Least Squares
    - As best linear predictor.
    - As linear regression.
    - Finite and large sample properties.
    - Hypothesis tests.