

Statistical Analysis and Statistical Packages

Instructor: Piotr Evdokimov

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Class Time: To be announced

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Course Description

This course is an introduction to core methods in econometric analysis with an emphasis on practical application. The first half will focus on the lynchpin of econometric analysis, ordinary least squares (OLS) and cover violations of standard assumptions. The second half will survey other topics, including binary response models, panel data regressions, and time series, as time and class interest permit. Throughout the course we will apply our basic theory to data. Students will learn how to use the statistical package Stata while getting hands-on practice with economic data and implementation of the econometric models from class.

Important: If you do not already have Stata on your computer, you can purchase a short term student license for \$48 at <https://www.stata.com/order/new/edu/gradplans/student-pricing/>

Textbook

The textbook for the course is “Econometric Analysis” by William H. Greene. This textbook is optional and is meant to serve as a supplement to in-class instruction.

Prerequisites

College-level mathematics including linear algebra and derivatives. While I will review basic linear algebra concepts at the beginning of the course, I expect a certain level of mathematical maturity from students taking this class.

Communication

Messages, important dates, assignments, etc. will be posted on the course website, and announcements will be made in class. In case of emergency changes I will contact everyone by university email.

Grading

Your grade will be computed as follows:

- Homework 20%
- Midterms (1) 40%
- Final Exam 40%

Homework

There will be several homework assignments. Homework questions will be both theoretical and applied.

Make-up Examinations

Make-up final exams will *ONLY* be allowed in extreme cases, such as documented illness or family emergencies. You should inform me as soon as possible if an issue does come

up and certainly before test time. There will be no make-up exam for the midterm. In the event of a valid absence from the midterm, the weight of the midterm will be added to the final exam.

Topics to be covered

- Week 1: Linear algebra review and introduction to OLS
- Week 2: Introduction to OLS (continued)
- Week 3: Geometry of OLS
- Week 4: Partitioned Fit
- Week 5: Unbiased estimation
- Week 6: Efficient estimation, common estimation issues
- Week 7: OLS inference (confidence intervals, hypothesis testing)
- Week 8: Heteroskedasticity
- Week 9: Instrumental variables
- Week 10: Time-series analysis
- Week 11: Discrete choice models
- Week 12: Panel data
- Week 13: Panel data (continued)