

# **Introductory Econometrics 1**

## **“Regression Analysis with Cross-sectional Data”**

Lecturer: Grigory Kosenok

### Module 3

The objective of the course is to familiarize students with basic concepts of econometric analysis. Students are assumed to have sufficient background in statistics, calculus and matrix algebra. The main textbook is “Introductory Econometrics: A Modern Approach” by Jeffrey Wooldridge (4<sup>th</sup> edition). There are 14 lectures and 7 seminars. Every week a problem set will be distributed. Best 5 problem sets will be counted for 20% of the final grade. The final written format A4 exam will give 80% of the final grade. The final exam lasts 3 hours.

### **Course Outline**

Week 1: Introduction. Simple regression model. Ordinary least squares. (Ch. 1,2).

Week 2: Multiple regression analysis: Goodness of fit. Irrelevant variables. Omitted variable bias. Multicollinearity. Misspecified models. Gauss-Markov theorem. (Ch. 3).

Week 3: Multiple regression analysis: Testing hypotheses. Confidence intervals. Testing multiple linear restrictions. F and t statistics. (Ch. 4).

Week 4: Multiple regression analysis: Consistency. Asymptotic normality. Asymptotic efficiency. Lagrange multiplier statistic. (Ch. 5).

Week 5: Multiple regression analysis: Goodness of fit and selection of regressors. Prediction. Dummy variables. Linear probability model. (Ch. 6,7).

Week 6: Heteroskedasticity. Testing for heteroskedasticity. White test. Generalized least squares. Functional form misspecification. Proxy variables. Measurement error. Missing data. (Ch. 8,9).

Week 7: Maximum Likelihood estimation in linear regression. Instrumental variables estimation and two stage least squares. Simultaneous equations models. (Ch. 15,16).

### **Additional Literature**

Wooldridge, J. “Econometric Analysis of Cross Section and Panel Data”, MIT Press, 2002