George Mason University  
Schar School of Policy and Government

Draft Syllabus (subject to change)  
**Introduction to Data Analysis for PhD Students (POGO 511)**

Fall 2020

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Office hours: Tuesdays, 1:30-3 p.m., or by appointment

This course introduces PhD students to econometric methods useful in policy evaluation and research. Pre-requisites include basic mathematics (algebra and elementary calculus), probability, and statistics. Relevant statistical theory will be discussed, but the course will emphasize intuition and practical applications rather than rigorous proofs.

Most class meetings will consist of lectures and discussions of statistical methods. Four meetings will be reserved for learning Stata, the leading statistical program used by economists, political scientists, and sociologists. These classes will be led by Dr. Kyung Min Lee.

The assignments for the course are designed not only to further understanding of topics in data analysis but also to develop students’ abilities as policy researchers. In addition to a final exam, there are three problem sets and two computer assignments. The final course grade will be determined by the problem sets (10% each), the computer assignments (10% each), and the final exam (40%).

By the end of the course, students should be able to understand, interpret, and criticize simple statistical analyses in professional social science journals and to carry out similar analyses themselves. The most important tool for policy analysis and empirical research in the social science more generally is regression, and thus the goal of the course is for students to understand the uses and limitations of this tool and to be able to apply it in simple contexts. By the end of the course, students should also have sufficient preparation for more advanced courses in specialized fields of statistics and econometrics.

The main textbook for the class is Wooldridge, *Introductory Econometrics*, 7th Edition, 2018. This book is already a classic in social science, having revolutionized the teaching and practice of program evaluation and estimation of “causal effects” more generally, and it is also the very best book that a PhD student (and even many scholars) can own as a reference both when reading journal articles and when designing research projects.

Course software: Stata 13 or newer, IC or SE (SE is better for larger data sets, but IC is adequate for this class; see http://www.stata.com/products/which-stata-is-right-for-me/). You can purchase a license or get free access two ways: computer labs in Arlington or “Virtual Computing Lab” (https://itservices.gmu.edu/services/view-service.cfm?customel_dataPageID_4609=5385).

Other resources:


**Outline of Topics and Schedule (preliminary and subject to change)**

1. (August 24): Introduction and Review of Probability
   
   Wooldridge, Chapter 1 and Appendices A and B

2. (Sept 7): Review of Statistics
   
   Wooldridge, Appendix C

3. (Sept 14): Introduction to Stata

4. (Sept 21): Simple Linear Regression
   
   Wooldridge, Chapter 2
   HW 1 due

5. (Sept 28): Multiple Regression I (Estimation)
   
   Wooldridge, Chapter 3

6. (Oct 5): Descriptive statistics with Stata

7. (Oct 13): Multiple Regression II (Inference)
   
   Wooldridge, Chapter 4
   Stata assignment 1 due

8. (Oct 19): Multiple Regression III (Applications)
   
   Wooldridge, Chapter 6

9. (Oct 26): Regression with Stata

10. (Nov 2): Qualitative Variables
    
    Wooldridge, Chapter 7
    HW 2 due
11. (Nov 9): Time Series
   Wooldridge, Chapter 10

12. (Nov 16): Panel Data
   Wooldridge, Chapter 13
   HW 3 due

13. (Nov 23): Stata Applications

14. (Nov 30): A Taste of FE and IV; Review for Final Exam
   Fixed Effects: Wooldridge, Chapter 14
   Instrumental Variables: Wooldridge, Chapter 15
   Stata assignment 2 due

Final exam: TBD

Academic Accommodation for a Disability
If you are a student with a disability and you need academic accommodations, please see me and contact the Disability Resource Center (DRC) at (703) 993-2474. All academic accommodations must be arranged through the DRC as early as possible in the term.

Schar School Policy on Plagiarism
The profession of scholarship and the intellectual life of a university as well as the field of public policy inquiry depend fundamentally on a foundation of trust. Thus any act of plagiarism strikes at the heart of the meaning of the university and the purpose of the Schar School. It constitutes a serious breach of professional ethics and it is unacceptable. Plagiarism is the use of another’s words or ideas presented as one’s own. It includes, among other things, the use of specific words, ideas, or frameworks that are the product of another’s work. Honesty and thoroughness in citing sources is essential to professional accountability and personal responsibility. Appropriate citation is necessary so that arguments, evidence, and claims can be critically examined. Plagiarism is wrong because of the injustice it does to the person whose ideas are stolen. But it is also wrong because it constitutes lying to one’s professional colleagues. The faculty of the Schar School takes plagiarism seriously and has adopted a zero tolerance policy. Any plagiarized assignment will receive an automatic grade of “F.” This may lead to failure for the course, resulting in dismissal from the University. This dismissal will be noted on the student's transcript. For foreign students who are on a university-sponsored visa (eg. F-1, J-1 or J-2), dismissal also results in the revocation of their visa. The policy on plagiarism is supplementary to the George Mason University Honor Code; it is not intended to replace it or substitute for it.