Syllabus

Professor: Tom Evans
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Office Hours: 4:30-5pm MW, 2-50pm Thursdays

Lecture: MW 8:40-9:55am, MVR G71

Teaching Assistant: Kyun Suk Chang (kc786)
TA Office: MVR 3M28
TA Office Hours: Tuesdays 4:30pm ~ 6:00pm and Fridays 10:30am ~ 12:00pm
Section 200: M 11:15-12:05 MVR 280
Section 201: M 12:20-1:10 MVR 153

Overview: PAM 3100 introduces students to the study of modern econometric techniques as employed in economics and policy analysis. We will study the basic linear regression model, learn how to estimate multivariate relationships in a data sample, and test hypothesis about the underlying population. We will then consider situations in which linear regressions will yield biased estimates of the population parameters of interest, with particular attention to measurement error, selection on unobservables, and omitted variables. The course will end with a brief introduction to panel data techniques and instrumental variables. Throughout the course we will discuss how these techniques can be used to conduct policy analysis as well as the potential problems and pitfalls with doing so. The course will cover both theoretical and practical issues, and problem sets will contain application to real data and require the use of statistical software.

Learning Objectives:
Outcome 1: Describe the Multiple Regression Analysis tool.
Outcome 2: Explain how Multiple Regression Analysis tool works and what it can be used for.
Outcome 3: Use the Multiple Regression Analysis tool to analyze real-world relationships.
Outcome 4: Evaluate how other researchers have used the Multiple Regression Analysis tool.
Course Materials:
All course information, announcements, data sets, and so on will be made online via Blackboard (Cornell’s system of academic websites). You can gain access to Blackboard at blackboard.cornell.edu (click the “For Students” tab, then click “How to Self-Enroll in a Blackboard Site.”

Textbooks:

1) **Required:** Jeffrey M. Wooldridge, “Introductory Econometrics: A Modern Approach.” 5th Edition 2012. ISBN 978-1111531041. Used copies and older editions are acceptable. You do not need to purchase the data supplement, however, it may be useful. I have placed a copy of this textbook on reserve at Mann Library.

2) **Suggested:** Dominick Salvatore and Derrick Reagle, “Statistics and Econometrics.” 2nd Edition. This text is part of the Schaum’s Outlines series. It provides a summary of all material that will be covered, a large number of solved problems, and a large number of practice problems. If you are having any difficulty at all with the material, you should purchase and use this text.

3) **On Reserve:** I have placed a copy of “A Gentle Introduction to Stata” on reserve at Mann Library. This book will be helpful in learning how to use Stata.

4) **Stata link:** Online Stata tutorial (http://www.princeton.edu/~otorres/Stata/)

Exams: There will be two preliminary and one final exam. All exams will be closed book and closed notes. The preliminary exams will be held in class during regular class time. The sum of the preliminary and final exams will count for 50% of your final grade. If your final exam grade is lower than both midterms, the final exam will count for 20% of your grade and the midterms will count 15% each. However, if you’re final exam grade is greater than either one of your preliminary exam grades, your final exam will count for 35% of your final grade, your lowest preliminary exam will be dropped, and your highest prelim will count for 15%. As a result, there won’t be any make up prelim exams. If you miss a prelim your score of zero will simply be dropped and the final exam will count for 35%.

Problem Sets: There will be four problem sets. The problem sets will be equally weighted, and count for a total of 20% of your final grade. There won’t be any extension of homework
deadlines or make-up homework assignments. The homework assignments are meant to teach you the material, and to prepare you for the exams. You are permitted - actually encouraged - to work in small groups on the homework assignments, though you must hand in individual work.

**iClicker Questions:** I will present a multiple choice question at the start of most lectures. The questions are to be answered with an electronic clicker that must be purchased and registered. The question will be based on the material covered during the previous class, or readings that I assign. For each question that you answer you will receive 1 point. For each question that you answer correctly you will receive 1 additional point. If you miss a class you will receive zero points. I will drop your lowest 3 scores. There won’t be any make-up questions. The total of your clicker questions will count for 10% of your final grade.

**Research Paper:** 20% of your final grade will be based on an empirical research paper. I will provide more detail in the near future; however, here is a brief outline of what I am expecting. You and your research partner are required to select and evaluate the effect of a policy change. As part of the requirement, you will have to select a policy, write a literature review, find an appropriate dataset, present the data, use the techniques taught in this class to evaluate the effects of the policy, and present your results in a formal written report. You will receive 5% for the literature review, 5% for the data presentation, and 10% for the final completed paper.

**Office Hours/Getting Help:** You can ask me question immediately after class. I will hold office hours from 4:30-5:00pm Mondays and Wednesdays, and on Thursdays from 2-5pm. Additionally, I am willing to meet with you by appointment. E-mail is the easiest way to get in touch with me if you have additional questions.

**Academic Integrity:** Each student in the course is expected to abide by the Cornell University Code of Academic Integrity: (seehttp://cuinfo.cornell.edu/Academic/AIC.html.) Any work submitted by a student in this course for academic credit must be the student’s own work. Students agree that by taking this course all required papers may be subject to submission for textual similarity review to Turnitin.com for the detection of plagiarism. All submitted paper will be included as source documents in the Turnitin.com reference database.
solely for the purpose of detecting plagiarism of such papers. Use of Turnitin.com service is subject to the Usage Policy posted on the Turnitin.com site.

Disability Accommodations: If you have a disability that requires accommodation, especially additional time for exams, please bring a copy of your approval letter to my attention as early as possible in the semester so that I can make arrangements.

Class Schedule:

W  Jan 27  First day of class
M  Feb 1  Practice iClicker
W  Feb 3  iC1
M  Feb 8  iC2
W  Feb 10  iC3
M  Feb 15  February Break…no class
W  Feb 17  iC4
M  Feb 22  HW1 due
W  Feb 24  iC5
M  Feb 29  iC6
W  Mar 2  iC7
M  Mar 7  iC8
W  Mar 9  HW2
M  Mar 14  Prelim 1
W  Mar 16  iC9
M  Mar 21  iC10 Literature Review due
W  Mar 23  iC11
M  Mar 28  Spring Break…no class
W  Mar 30  Spring Break…no class
M  Apr 4  iC12
W  Apr 6  iC13
M  Apr 11  iC14
W  Apr 13  HW3
M  Apr 18  iC15
W  Apr 20  iC16 Data Presentation
M  Apr 25  iC17
W  Apr 27  HW4
M  May 2  Prelim 2
W  May 4  iC18
M  May 9  iC19
W  May 11  Research Paper Due

Final Exam - At the University scheduled time and place - to be determined.
Order of Topics

1. Ordinary Least Squares – Chapter 2
   a. Fitting a line to a scatter plot
   b. Minimizing the sum of squared residuals
   c. Predicted values
   d. Residuals
   e. Introduction to R

2. Multiple Regression Analysis – Chapter 3
   a. Motivation
   b. Mechanics and interpretation
   c. The meaning of ceteris paribus in regression estimation
   d. Expected value
   e. Variance of OLS estimates
   f. Efficiency of OLS

3. Multiple Regression Analysis: inference – Chapter 4
   a. Sampling distributions
   b. Testing hypothesis about a single population parameter – the t-test

4. Multiple Regression Analysis with Qualitative Information – Chapter 7
   a. Introduction and description
   b. A single independent dummy variable
   c. Multiple independent dummy variables
   d. Dummy interactions
   e. Difference in difference estimation
   f. A single dependent dummy variable – the linear probability model

5. Further Issues in Multiple Regressions Analysis – Chapter 6
   a. Units of measurement and functional form
   b. Data scaling
   c. Adjusted R²
   d. Prediction and residual analysis
   e. Omitted variable bias
   f. Measurement error bias
   g. Simultaneous equation bias
   h. Testing hypothesis about a single linear combination of parameters
   i. Testing multiple linear restrictions – the F-test

6. Heteroskedasticity – Chapter 8
   a. Consequences of heteroskedasticity
   b. Testing
   c. Robust estimation

7. Basic Regression Analysis with Time Series Data – Chapter 9
   a. The nature of time series
   b. Examples
   c. Finite sample properties
   d. Functional form, dummy variables and index numbers
   e. Trends and seasonality