ECON 4151, Applied Econometrics  
Washington University in St Louis  
Fall 2017

Instructor: Maria E Canon.  
Time: M W 2:30pm – 4:00pm  
Classroom: TBD (lectures), Seigle L016 (computer lab, F 11:00am-12:00pm)  
Office hours: Wednesday 12:00pm– 2:00pm by appointment (Seigle 315A )  
e-mail: mcanon@wustl.edu  
Teaching Assistant: TBD  
TA office hours: TBD

Prerequisites  
ECO 4111, ECO 413, and MATH 2200 or equivalent.

Required Text  
Introductory Econometrics A Modern Approach, 6th edition, Jeffrey M. Wooldridge  
Econometrics by Example, Damodar N. Gujarati

Recommended References  
Microeconometrics Using Stata, Cameron and Trivedi

Computer Software  
We will be using Stata. Washington University participates in the "STATA Campus GradPlan." Link to discounted packages: http://www.stata.com/order/new/edu/gradplans/campus-gradplan/

Philosophy and Goals  
The goal of this course it to provide students with a thorough understanding of core techniques of econometrics and learn how to apply them to test economic theories and quantify relevant factors for economic policy and other decisions. The course will focus on Microeconometrics topics. You will learn how to use data to test economics models, and how to quantify parameters of interest; these skills are key elements in the professional training of an economist. The main focus will be on econometric methods that are useful to analyze individual level data (microdata), and on empirical applications that are relevant to policy questions. Accordingly, the course will emphasize empirical applications in the computer lab, but the mathematics of econometrics will be the central focus during the in-class lectures.
The course will emphasize the relationship between economic theory and the empirical models used to test them. Therefore, the course requires knowledge of basic economic theory (such as formulating and solving utility maximization problems and equilibrium models). In addition, I assume knowledge of the material covered in the Introductory Econometrics course as well as the statistical and mathematical tools used for analysis in that course. I included a list of topics that you need to know below. You are encouraged to review the material; I added the relevant chapters in Wooldrige and in Gujarati and Porter you can read, but you can use your Introductory class notes and materials instead.

**Intended Learning Outcomes**

- Understand the main techniques of econometrics, including their strengths and limitations.
- Be able to apply these techniques to test economic theories and measure relevant economic parameters.
- Know the main empirical regularities, the theories explaining them, and the empirical literature in selected applied areas.
- Have practical experience of the application of econometric methods, and be able to use STATA to work with data to estimate models.

**Academic Dishonesty**

The tests and the final exam are to be your own work. As such, evidence to the contrary will result, initially, in a failing grade on the assignment, and immediate academic disciplinary action. You may work with others on the homework assignments; but you must submit your solutions individually. If you ever feel that these standards of academic integrity are not being met, please notify me or an undergraduate advisor immediately. If you are uncertain about the policy on academic integrity at Washington University, refer to your undergraduate advisor, to the university’s Student Judicial Procedures, or to your school’s statement of student academic integrity. (For ArtSci students, the latter is published each semester in the Course Listings booklet.)

**Grading**

The following weights will be used to determine your course grade:

- Homework: 20%
- Midterm 1: 30%
- Midterm 2: 30%
- Final project: 20%

**Homework**

Homework is an integral part of this course, because the best way to learn econometrics is to do it. I will assign homework throughout the semester.

The homework assignments will include theoretical problems and data and computer exercises. You should use STATA for the data analysis. You will have at least a week to solve each assignment. I encourage you to discuss the problems with your classmates.
From my experience as a student, you can learn a great deal from your fellow students. However, after discussing problems, you should solve the problems on your own. Joint assignments will not be graded.

The TA will cover some guidelines for STATA during the labs. The first 2 labs will review material from ECON 494, Introduction to STATA.

**Tests**
Exam 1: During the regular course meeting time, October 4th
Exam 2: During the regular course meeting time, November 15th

There will be no make-up exams. If Exam 1 is missed for a legitimate reason that has been pre-approved, Exam 2 will count towards 60% of the final grade.

**Final Project**
All students are required to submit a final project/homework on panel data which will be due on Friday December 8th, 2017 at 2pm, late submissions will not be accepted.

**Purpose of Project**
The purpose of this project is to provide an opportunity to have hands on experience working with a large data set, estimate an economic model with appropriate data, and interpret the results. This experience will help you understand how different topics we see over the semester relate with each other and with topics in other economics courses which focus on theoretical models for how the world operates.

**Topics to Review**
The material we will learn requires the knowledge of the topics covered in Introduction to Econometrics course. You should review the following topics (this is not a comprehensive list but the topics below are important)

2. Statistical inference, confidence intervals (Wooldrige chapters 4,6; Appendix A, B, C Gujarati and Porter)
3. OLS (multiple regression) assumptions, properties, basic math required to derive the estimator, R-squared, and variances formulas, etc. (Wooldrige chapters 2,3; Gujarati and Porter chapters 3, 4)
4. Heteroskedasticity (Wooldrige chapters 4,6; Gujarati and Porter chapter 9)