Public Policy 42000: Applied Econometrics I  
(Logistics Forthcoming)

This course is the first in a three part doctoral introduction to econometrics. The focus of this course is the nature of statistical models of socioeconomic data with a primary focus on linear systems. The course is concerned with the construction and interpretation of models, not estimation. At the same time, the teaching assistants will teach the software package Stata and there will be homework assignments involving actual estimation.

**Lectures:**

In-person lectures will be given 4:30-5:50 Keller 1002.

Lectures are Mondays and Wednesdays with exception of week 1; there will be a lecture on Friday September 30.

**TA sessions:**

**Readings:** The course is based on lecture notes. William Greene *Econometrics* is assigned as a required text as it is a good compendium of econometric results. Robert Ash and Melvin Gardner, *Topics in Stochastic Processes*, is a deep discussion of the underlying mathematics for many of topics of this course. Other readings will involve scholarly articles.

**Grading:** We base grades on homework assignments, a midterm exam, and a final exam. The weights are as follows: Final 50% Homework 30% Midterm 20%.

There will be 6 homework assignments. The assignments will be due 10/10, 10/17, 10/24, 10/31, 11/14, 11/21 (all Sundays).

**Homework:** All assignments will receive equal weight. Assignments should be submitted on-line on Canvas and are due at 23:59 pm on Sundays. No late assignments will be accepted.

**Exams:**

Midterm: October 30

Final: December
Office Hours

Professor: Tuesdays 5:00pm-6pm Central Time, 3035 Keller

TAs
Topics

**Topic 1: Probability Theory**

Lecture Notes 1: Probability Theory
Ash and Gardner, Chapter 3
Greene, Appendix B.1-B.6

**Topic 2: Statistical Decision Theory**

Lecture Notes 2: Decisions and Data
Greene Sections 16.1-16.2

**Topic 3: Models and Identification**
Lecture Notes 3: Identification


**Topic 4: Linear System Theory**

Lecture Notes 4: Linear System Theory

Greene, Appendix A.1-A.4

**Topic 5: Linear Statistical Models/Regression**

Lecture Notes 5: Linear Regression

Greene, Chapters 2, 3


**Topic 6: Time Series**

Lecture Notes 6: Linear Structure of Time Series

Lecture Notes 7: Frequency Domain Approach to Time Series

Lecture Notes 8: Vector Autoregressions

Lecture Notes 9: Unit Roots
Ash and Gardner, Chapters 1-3.

Greene, Chapters 20-21.


**Topic 7. Simultaneous Systems, Endogeneity, Instrumental Variables**

Lecture Notes 10: Linear Simultaneous Equations Systems

Greene, Sections 8.4, 10.4.


**Topic 8. Functional Data Analysis**

Lecture Notes 11: Functional Data Analysis
