

## **Econometrics**

### **Objective:**

Enabling students to critically read empirical studies that use different econometric techniques to address policy questions, to identify some of the most common econometric problems in these studies, and to understand the potential consequences and remedies. At the end of this course, the students should also be able to analyze data using the most common estimation techniques and with the help of statistical software (STATA).

### **Prerequisite:**

High school algebra and Statistical Methods for Business and Economics (or an equivalent statistics college course). Appendix A, B and C of the textbook (Wooldridge) cover the mathematical and statistical material that you will be assumed to master before taking the course. Being able to apply statistical concepts fluently is crucial for learning Econometrics.

### **Requirements:**

There will be 6 problem sets that consist of computer assignments and exercises. In the last problem set you will be asked to critique an empirical paper. The problem sets will require a substantial amount of work. Students are strongly encouraged to form teams of 3 for the problem sets. The teams need to be formed for the first problem sets and can't be changed for the rest of the semester. The only alternative to teams of 3 is doing all problem sets individually.

The best 5 problem sets will have an equal weight in the final grade for the class. Penalty for each day of late delivery will be 1 % of the final grade for the class. Grades will be based on the following requirements:

Problem sets	30 %
Mid-term exam (take home)	30 %
Final exam (in class)	40 %

The take home mid-term exam will be distributed on Friday October 28<sup>th</sup>, at noon and will be due beginning of class on Monday October 31<sup>st</sup>. The final exam will be on Monday, December 12<sup>th</sup>. Absences from the exam are allowed only for validated medical reasons. Scheduling conflicts with exam dates must be cleared with the instructor 3 weeks in advance of the scheduled date at the latest. Any rescheduled exams must be taken earlier than the scheduled exam.

### **TA:**

There will be a TA for this class (to be announced). He/she will hold tutorial sessions (twice a week) that will prepare you for the computer assignments and will go over the key concepts covered in class. The timing of the tutorials will be discussed the first week of class. The TA will also hold office hours (timing to be announced).

**Readings:**

Students are responsible for the readings indicated in the course outline for each week. Students are strongly encouraged to study the readings both before and after each class.

Required text: Jeffrey M. Wooldridge, 2003, *Introductory Econometrics: A Modern Approach*, 3<sup>rd</sup> edition, South-Western Publishing Co (2<sup>nd</sup> edition is also accepted).

Supplementary reading: Peter Kennedy, 2003, *A guide to Econometrics*, MIT Press.

**Course Outline:**

Sept 12	Introduction – Motivation – Definition simple regression model	Ch 1 Ch 2.1
Sept 19	Simple regression model	Ch 2
Sept 26	Simple regression model	Ch 2 / 3
Oct 3	Multiple regression estimation	Ch 3
Oct 10	Multiple regression estimation	Ch 3 / 4
Oct 17	Multiple regression inference	Ch 4
Oct 24	Beta-coefficient – functional form – goodness of fit	Ch 6
Oct 31	Dummy variables Short introduction to impact analysis	Ch 7.1-7.4 Ch 7.6
Nov 7	Binary dependent variables	Ch 7.5; 17.1
Nov 14	Heteroscedasticity	Ch 8
Nov 21	Sample selection – Data problems	Ch 9
Nov 28	Basics of Regression Analysis with Time Series Data Autocorrelation	Ch 10
Dec 5	Instrumental Variables – Simultaneous equations	Ch 15.1-15.5

The class notes, problem sets, answer keys, etc., will be posted on the class website:

<http://saisprod.nts.jhu.edu/Faculty/kmacours/metrics05f.html>

**Schedule for Assignments:**

	<u>Handout</u>	<u>Due</u>
PS1	Sept 19	Beginning of class Sept. 26th
PS2	Oct 3	Beginning of class Oct. 10th
PS3	Oct 17	Beginning of class Oct. 24th
Midterm	Oct 28	Beginning of class Oct. 31st
PS4	Nov 7	Beginning of class Nov. 14th
PS5	Nov 21	Wednesday Nov. 30 <sup>th</sup> , noon
PS6	Nov 28	Friday Dec. 9, noon