Term: Winter 2014

Course: Economics 615
Advanced Econometrics I

Time: TR 12:30 – 13:45   **Place:** SS 423

Instructor: Pamela Campa

Office: SS 422   **Telephone:** 403 220-4628

Office Hours: R 17:00-18:30
Please book a slot here:
http://doodle.com/uhsv4hgstsmr5e2e

E-mail:
pcampa@ucalgary.ca

Textbook(s):

A. Colin Cameron and Pravin K. Trivedi. *Microeconometrics: Methods and Applications* (Cambridge University Press, 2005)

The textbook is intended as the main reading for the course. Although in the outline I will refer to entire chapters of the textbook, sometimes you will be required to read only portions of each chapter, the selection of which will be made clear during the respective class. For specific topics I will also use the following textbooks:

Angrist, J., and S. Pischke. *Mostly Harmless Econometrics* (Princeton University Press, 2008)

Although this book is a "must have'' for anybody interested in working with cross-sectional and panel data to identify causal relationships, it is not required for this course; we will work on very limited sections of the book, which will be available in PDF on Blackboard.

Kenneth Train, *Discrete Choice Methods with Simulation*, available here:
http://elsa.berkeley.edu/books/choice2.html

In addition, we will occasionally discuss in class research papers. These papers are marked with one asterisk in the list below, which means that they are supplemental materials. You can be tested for the portion of these readings that is included in the lecture slides. The list may change throughout the term, in which case I will make an announcement. All the readings and the lectures slides will be available in PDF on Blackboard, unless otherwise noted.

Another text that you might find useful is:

Wooldridge, *Econometric Analysis of Cross Section and Panel Data*. (MIT Press)

What is this course about?

This course is intended to provide a foundation of econometric theory relevant for carrying out empirical work in economics. We will survey theory and applications of methods of data analysis developed for micro data. We will mostly focus on the analysis of cross-sectional data, and we will introduce some panel data techniques only if time allows. We will review the linear regression model, and then we will study estimation methods for non-linear models. We will focus on the most commonly used non-linear models, and we will also study numerical methods, which are useful when we depart from standard models, and a closed-form solution for the non-linear estimator does not exist.

I assume that the student taking this course has taken mathematical statistics or econometrics at the undergraduate level, a course in linear algebra, and a course in multivariate calculus. Linear algebra and multivariate calculus will be used frequently.

During our first class I will distribute a handout that recaps some basics notions of linear algebra and calculus. Your knowledge of these notions, together with the material covered in the first weeks of the course, will be tested in the first problem set.

Course Outline

1. Linear Models

   Ordinary Least Squares, Weighted Least Squares, Median and Quantile Regression, Model Misspecification, Instrumental Variables

   CT, Chapter 4

   MHE, Chapter 3

   *Staiger and Stock, 1997. Douglas Staiger & James H. Stock, 1997. Instrumental Variables Regression with Weak   Instruments. *Econometrica.* Econometric Society, vol. 65(3), May.
   * Joseph G. Altonji, Todd E. Elder and Christopher R. Taber, 2005. An Evaluation of Instrumental Variable Strategies for Estimating the Effect of Catholic Schooling. *The Journal of Human Resources* Vol. 40, No. 4

2. Bootstrap Methods

   CT Chapter 4

3. Nonlinear Estimators

   Nonlinear Least Squares, Maximum Likelihood

   CT Chapter 5

4. Classical Hypothesis Testing
   - Hypothesis testing for inference

CT Chapter 7

- Specification tests and model selection

CT Chapter 8

5.   Discrete Choice Models

- Binary Outcome Models: Logit, Probit

CT Chapter 14

Kenneth Train, Chapters 2, 3, 5

- Multinomial Models: Multinomial Logit, Nested Logit, Multinomial Probit, Ordered Choice Model

CT Chapter 15

*Boskin, Michael J, 1974. A Conditional Logit Model of Occupational Choice. Journal of Political Economy, *University of Chicago Press*, vol. 82(2),

- Numerical Maximization

CT Chapter 16

Kenneth Train, Chapter 8

6.   Tobit

CT Chapter 16

7.   Survival Analysis

CT Chapter 17

*Van den Berg, Gerard J., 2001. Duration models: specification, identification and multiple durations, in: J.J. Heckman & E.E. Leamer (ed.), *Handbook of Econometrics*, edition 1, volume 5, chapter 55, pages 3381-3460 Elsevier

8.   Generalized Method of Moments

CT Chapter 6

If time permits, we will also cover, in the following order: simulation based estimation, semi-parametric methods, panel data methods (fixed effect estimation, diff-in-diff and event study).

Grade Determination and Final Examination Details:

First Midterm Examination: 15%

Second Midterm Examination: 15%

Five Home Assignments and Class Participation: 20%. Students may work on home assignments in groups of up to three people, but they need to hand in individual copies of the solutions. Students are strongly encouraged to work on the assignments and to understand the solutions, as this will undoubtedly help in test preparation. Midterms and Finals are usually based on problem solving techniques developed in class and in the homework assignments.

Final Examination: 50%

Students who are unable to write the midterm because of an illness, family emergency or religious observance will have the midterm weight shifted to the final examination. Documentation MUST be provided. If there are other reasons not listed above that prevent you from taking the midterm exam please come and talk to me.

There will be a scheduled final examination, lasting 2 hours. Tests and exams will not involve multiple choice questions. Non-programmable calculators WILL be allowed during the writing of tests or final examinations.

Tests and final exams are marked on a numerical (percentage) basis, and then converted to letter grades. The course grade is then calculated using the weights indicated above. As a guide to determining standing, these letter grade equivalences will generally apply:

A+	95 – 100	B	73 – 76	C-	60 - 62
A	85 - 94	B-	70 – 72	D+	56 - 59
A-	80 - 84	C+	67 – 69	D	50 - 55
B+	77 - 79	C	63 – 66	F	0 - 49

All students must comply with the regulations published in the University Calendar concerning "Intellectual Honesty," "Examinations," etc.

Miscellanea

DO's and DON'Ts
● DO feel completely comfortable participating in class. There really is no such thing as a dumb question.

- DO feel free to disagree with me or students in class (in a respectful manner).
- Please DO NOT use your cell phones. It is distracting for everyone in class, including me.

First week
1. Please submit a short letter of introduction of yourself to me (one or two paragraphs will be enough). Include your official name and what you would like to be called, and any other information about yourself that you'd like to share with me. Print this and bring it to class.

2. Please make a name card, and bring it to next few classes.

Important Dates

January 9, 2014	First class meeting
February 6, 2014	Mid-term 1
March 6, 2014	Mid-term 2
April 10, 2014	Last day of classes

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Students' Union Vice-President Academic:
        Emily Macphail
        Phone: 403-220-3911
        E-mail suvpaca@ucalgary.ca

Students' Union Faculty Representative (Arts)
        Phone: 403-220-3913   Office: MSC 251
E-mail arts1@su.ucalgary.ca arts2@su.ucalgary.ca, arts3@su.ucalgary.ca, arts4@su.ucalgary.ca

Notes:
- It is the student's responsibility to request academic accommodations. If you are a student with a documented disability who may require academic accommodation and have not registered with the Disability Resource Centre, please contact their office at 403-220-8237. Students who have not registered with the Disability Resource Centre are not eligible for formal academic accommodation. You are also required to discuss your needs with your instructor no later than fourteen (14) days after the start of this course.

- Students seeking reappraisal of a piece of graded term work should discuss their work with the instructor *within fifteen days* of work being returned to class.

Safewalk / Campus Security: 403-220-5333
Emergency Assembly Point: Professional Faculties Food Court
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