

Northeastern University
Department of Economics

Applied Econometrics II

(ECNG 740)

Fall 2005

M, Th 4:00p–5:30p

425 Hayden

Contact Information

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Office Hours

Wednesdays, 3:00p–4:30p

Thursdays, 10:15a–11:45a

Overview

This course is intended to extend students' understanding of econometrics beyond the topics covered in ECNG140 (Applied Econometrics). The focus will be on methods for analyzing panel data with emphasis on those techniques prevailing in the Labor and Industrial Organization literature. Topics include: models with multiple equations, non-linear regression models, asymptotic theory, maximum likelihood, discrete choice models, limited dependent variables, duration models, and panel data methods. Students will develop and complete an econometric research paper in the area of Labor or Industrial Organization using one or more of the methods covered.

Prerequisites

The prerequisite for this course is ECNG140 (Applied Econometrics) or its equivalent. A working knowledge of the topics covered in ECNG140 and ECNG105 (Mathematics and Statistics for Economists) will be assumed. (Appendices A through E of Wooldridge's Introductory Econometrics text (see below) provide a good overview of notation and tools for those who need a refresher.)

Blackboard

Course documents (the syllabus (including any changes), handouts, and announcements) can be found by accessing **Blackboard**. All changes to the syllabus and all announcements will be posted there. In addition, grades for all assignments will be posted on **Blackboard**.

To use **Blackboard**, log in to your myNEU account (<http://myneu.neu.edu>). Once you have officially registered for the course, it should automatically appear in your "Course List". Click on ECNG740 Applied Econometrics II (Fall 2005). You should now be in the course content area. A **Blackboard** tutorial can be found at www.discoveringblackboard.neu.edu.

To submit assignments via **Blackboard**, find the appropriate item in the Assignments folder and click on "View/Complete". You will then be able to attach the file with your work.

Course Outline and Readings

Textbooks

Required Text

The required text for this course is:

- **(CT)** Cameron, A. Colin and Pravin K. Trivedi. Microeconometrics. New York, NY: Cambridge University Press, 2005.

The book provides more detail than will be covered in class. Lectures will mainly follow this text, but will also be drawn from a number of other sources.

Recommended Texts

The following texts are not required, but may provide additional insight and are meant to reinforce your understanding of the topic being discussed.

- **(W)** Wooldridge, Jeffrey M. Introductory Econometrics: A Modern Approach. 3rd ed. Mason, OH: Thomson South-Western, 2006.
- **(Gr)** Greene, William H. Econometric Analysis. 5th ed. Upper Saddle River, NJ: Prentice Hall, 2003.
- **(W2)** Wooldridge, Jeffrey M. Econometric Analysis of Cross Section and Panel Data. Cambridge, MA: MIT Press, 2002.
- Kennedy, Peter. A Guide to Econometrics. 5th ed. Cambridge, MA: MIT Press, 2003.
- **(Am)** Amemiya, Takeshi, Advanced Econometrics, 1985.
- **(Hs)** Hsiao, Cheng (a.k.a. Xiao, Zheng). Analysis of Panel Data. New York, NY: Cambridge University Press, 1986.
- **(Md)** Maddala, G. S. Limited Dependent and Qualitative Variables in Econometrics. New York, NY: Cambridge University Press, 1983.
- **(Mn)** Manski, Charles F. Identification Problems in the Social Sciences. Cambridge, MA: Harvard University Press, 1995.

- **(JD)** Johnston, Jack and John E. DiNardo. Econometric Methods, 4th ed. New York, NY: McGraw-Hill, 1997.
- **(Ha)** Hamilton, James D. Time Series Analysis. Princeton, NJ: Princeton University Press, 1994.

Wooldridge (2006), referred to as **W**, is an advanced undergraduate/basic graduate text that provides clear and concise descriptions and examples for some of the topics covered. Greene and Wooldridge (2002) cover more topics, but are also more difficult to read. Kennedy is an encyclopedia of econometric tools, useful for a brief overview and references to texts and articles. The other texts listed provide details on specific areas covered in this course.

All texts are on reserve in Snell library. All assigned articles will be available on **Blackboard**.

Course Outline

The main topics covered in the course will be:

1. Introduction

Read:

- Heckman, James J. (2000) "Causal Parameters and Policy Analysis in Economics: A Twentieth Century Retrospective." *Quarterly Journal of Economics*, vol. 115(1), pp. 45-97.
- CT: 1.1-1.2, 1.6; 2 (skim); 3

See also:

- W: 1
- Gr: 1
- W2: 1
- MN: 1-4

2. Asymptotic Theory (*1 to 2 lectures*)

- CT: Appx A

See also:

- W: 5
- Gr: Appx D
- W2: 3.1-3.4

3. Review of Linear Models (*1 to 2 lectures*)

- CT: Chapter 4.3-4.5, 4.7-4.8

See also:

- W: 6
- G: 3.2; 5
- W2: 4

4. M-estimation, Maximum Likelihood, and NLS (*3 to 5 lectures*)

- CT: 5

See also:

- W: Appx C.4
- Gr: 9.2; 17; 21.1-21.4
- W2: 12.4; 13.1-13.7
- JD: 10

5. Generalized Method of Moments (GMM) Estimation (*1 to 2 lectures*)

- CT: 6.1-6.5

See also:

- Gr: 18
- W2: 14
- Ha: 14 (skip pp. 422-426)

6. Binary and Multinomial Models (*2 to 4 lectures*)

- CT: 14.1-14.4, 14.9; 15.1-15.5, 15.9, 15.13

See also:

- W: 7; 17.1
- Gr: 21.1-21.8
- W2: 15.1-15.6, 15.9-15.10
- Am: 9.1-9.4
- Md: 1-3

7. Censored and Truncated Models (*2 to 4 lectures*)

- CT: 16.1-16.6, 16.11

See also:

- W: 17.4-17.5
- Gr: 22.1-22.4
- W2:16; 17
- Am: 10.1-10.10
- Md: 6.1-6.7; 8; 9.7-9.8

8. Hypothesis and Specification Tests (*1 to 2 lectures*)

- CT: 7.1-7.4, 7.9; 8

See also:

- W: 9
- Gr: 4.9; 5.6
- W2: 4.4; 11.1

9. Basic Linear Panel Models (*3 to 5 lectures*)

- CT: 21

See also:

- W: 13-14
- Gr: 13
- W2: 10
- Am: 6.4, 6.6-6.8
- Hs: 1-3

10. Other Topics (if time permits)

Depending on time and interest, other topics may include:

- Semiparametric Estimation
- Stratified and Clustered Samples
- Treatment Evaluation
- Measurement Error Models
- Missing Data and Imputation
- Survival Analysis

Any changes to the course outline will be posted on **Blackboard**.

Course Requirements

Computer Exercises (15%)

Homework will be assigned on a regular basis throughout the semester; it will be announced in class and will be available on **Blackboard**. It may either be submitted in class on the day it is due or via **Blackboard**, unless otherwise specified.¹

While students are encouraged to work together (especially in learning how to use a statistical package), each student is responsible for turning in his or her own assignment. Papers submitted with identical answers will be marked down.²

Class Presentation (5%)

Each student will present an empirical paper related to the one of the topics on the syllabus. Topics will be assigned in the first week of class and students will be responsible for finding an article employing the method assigned. Each presentation should last approximately 15 to 30 minutes.

The requirements for the paper presentation are detailed in the “Empirical Paper Presentation” handout. Your grade for the presentation will be based on fulfilling the requirements in the handout, as well as the appropriateness of the article selected.

Empirical Research Paper (15%)

The empirical research paper may be an original idea or an extension of previous work using one of the tools developed in this course. The paper should follow the styles found in Economics journals and contain both a methodology and an empirical section with estimates from a microdata set. For more details, see the *Guidelines for an Empirical Research Paper* handout.

There are a number of books that can help you in developing and writing your paper. While none of these books are required, I strongly suggest you purchase all of them as they will help you throughout your Ph.D. program and beyond.

- Booth, Wayne C., Gregory G. Colomb, and Joseph M. Williams. The Craft of Research. 2nd ed. Chicago, IL: University of Chicago Press, 2003.
- McCloskey, Deirdre N. Economical Writing. 2nd ed. Long Grove, IL: Waveland Press, 2000.

¹Please note that while submitting homework using **Blackboard**, you are still responsible for clearly indicating your answers on your output. Also, please take care to ensure that what you submit is printer friendly (e.g., Excel spreadsheets should be formatted so tables are not split across pages).

Points will be taken off if the homework is difficult to read or the answers are not clearly indicated whether submitted in class or via **Blackboard**.

²If two or more students turn in an assignment with identical answers to any problem, the grade for that problem will be determined by taking the actual grade and dividing it by the number of students who turned in the identical solution.

Answers will be considered “identical” if the text is the same or if the answers have been paraphrased.

- Turabian, Kate L. A Manual for Writers of Term Papers, Theses, and Dissertations. 6th ed. Chicago, IL: University of Chicago Press, 1996.
- Strunk, Jr., William, and E. B. White. The Elements of Style. 4th ed. Needham Heights, MA: Allyn & Bacon, 2000.
- University of Chicago Press Staff. The Chicago Manual of Style. 15th ed. Chicago, IL: University of Chicago Press, 2003.

The paper is due at 10 pm on the last scheduled day of class (Thursday, 8 December) and should be submitted via **Blackboard**. Supporting documentation (tables, programs, etc.) may be turned in at class time or left in my mailbox in 301 Lake Hall.

Exams (65%)

There will be two midterms and a final exam. Each midterm be worth 20% of your grade; the final exam will be worth 25%.

The exams are *tentatively* scheduled as follows:

Midterm 1: Thursday, 6 October

Midterm 2: Thursday, 10 November

Final Exam: Monday, 12 December

Any changes to this schedule will be announced in class and posted on **Blackboard**.

Grading Policies

Make-up Exams

There will be no make-up exams without a legitimate, documented excuse. If you need to make up an exam, you must contact me as soon as possible (preferably before the exam) to make alternative arrangements.

Late Assignments

Assignments will be marked down one grade step (e.g., an A will become an A-) for each day the assignment is late.

Cheating and Plagiarizing

Anyone caught cheating on an exam will receive an F in the course and be referred to the Graduate Academic Standing Committee (GASC) for appropriate disciplinary action. Plagiarism is a form of cheating. If a paper is plagiarized in full or in part, the student will receive an F in the course and be referred to the GASC.³

Papers submitted for this course must be submitted through **Blackboard** and may be subject to an electronic anti-plagiarism review. As part of this process, your paper may be placed in a permanent electronic database whose only purpose will be to act as a reference point for the anti-plagiarism software.

³For a general overview of what constitutes academic dishonesty and plagiarism, see pages 20 through 22 of the Graduate Resource Guide, which is available in 301 Lake Hall. The Northeastern Library web site also has a description of plagiarism, including examples (<http://www.lib.neu.edu/tutorials/plagiarism.html>).