Econometrics **Professor Dan Hungerman**

Economics 30331 dhungerm@nd.edu

320 Debartolo Office Hours: 439 Flanner, Tues. 3:15-5:00 & by appointment

Tues/Thurs: 2:00-3:15 Teaching Assistant: Clayton Sadler, csadler@nd.edu

Course Description:

This course is designed to enable you to read the literature of applied economics with a critical understanding and to perform elementary regression analysis. The core of the course will be a discussion of regression analysis (specification, estimation, and hypothesis testing), and the problems and pitfalls in its application in economics and other social science fields. I will provide an overview of how to carry out and interpret empirical research, using both theory and practice. While mathematical derivations will be presented, emphasis will also be placed on gaining an intuitive understanding of the principles of econometric analysis. You will also be given the opportunity to work with data, using the statistical software package Stata, which is available in all classrooms and clusters on campus.

Prerequisites:

ECON 30330 or a serious course in Mathematical Statistics. You are also expected to know simple calculus.

My colleague Bill Evans has made available a 20-page review of ECON 30330 and this is available on the class web page. This handout goes over important concepts such as expected values, covariance, correlation, linear combinations of random variables, test of hypothesis, testing the equality of means from two samples, etc. Please read over the handout. If the terms in that handout are foreign to you, you may need to review your ECON 30330 notes. Appendices A, B, and C in the Wooldridge book also cover some of this material.

Textbook:

Jeffrey Wooldridge, *Introductory Econometrics: A Modern Approach*, 4th Edition, South-Western, Cengage Learning

Problem Sets

You will be assigned six problem sets. The problem sets will require the use of the statistical program Stata, which is available on computers in the classrooms and clusters. The problem sets are designed to serve two main purposes. First, they will prepare you for exams by allowing you to test your understanding of the material. Second, they will prepare you for the course project by allowing you to practice using Stata. Many people find that small group discussions help with their understanding. Thus, you are encouraged to form a group of no more than 4 people to work on the problem sets. Each group will turn in one copy and everyone will receive the same grade. By putting your name on the group work, you are acknowledging not only that you did your fair share, but also that you understand how the group arrived at all of the answers. Thus, it is not acceptable to simply split the problem set questions up among the group and then staple the answers together at the end. Note that you are not required to stick with the same group for every assignment.

Course Project

There will be a written project due in class on Tuesday, December 1st. The project will consist of carrying out a specified empirical project and writing up the results in the form of a research paper. Further details on the nature of the project will be provided during the term. Generally, the course project is designed to give you a feel for working on a real research question, and thus to help better prepare you for carrying out your own projects. As with the problem sets, you are encouraged to form a group of no more than 4 people to work on the project. While it may be reasonable to split up writing duties, the overall approach and interpretation of the results needs to be fully discussed among the group members. Again your name on the paper is an acknowledgement of both having done your fair share and having understood what was done.

Course Events:
There will be two midterms, a final, and about six problem sets.

I may give quizzes, some pre-announced (and possibly some not) to make sure people are up-to-date on the readings and assignments. If you miss class or come to class late and have missed a pop quiz, there will be no makeup.

Class Policies:
Attendance will not be kept, but it is strongly advised that you come to class.

Readings may be assigned; please read them (unless you like pop quizzes).
Cheating will not be tolerated. The Undergraduate Academic Code of Honor may be found here: http://www.nd.edu/~hnrcode/docs/handbook.htm

I reserve the right to significantly alter a student's grade (including giving a grade of Failure) in response to serious episodes of low class attendance or poor class participation.

Laptops are allowed in class, although students planning to use email, surf the net, or otherwise waste time in class should read the preceding sentence. I despise cell phones and text messaging in class; these are practices which may have significant adverse effects on the final grades of offending parties.

Missing Classes:
If you participate in extra-curricular activities, please let me know early in the semester. If there is a pop quiz the date you miss class, we will try to work something out, but I will be much more sympathetic to this if your absence is communicated to me at the start of the semester. Any missed test should be conveyed, with university validation, in writing at least a week before the test. If a student misses a test without prior notice that student will be given a score of zero unless documentation of highly unusual intervening circumstances are provided. A retest will be given at my discretion, on my terms.

No Class:
I will have to cancel class a few times in the semester; I will try to communicate this in advance.

Names:
I am very bad at learning names. Please make a little "name tent" with your name on it and bring it to class and put it on your desk, so I can see the name with your face.

Grades:
Grades will be based on the problems sets (20%) the midterms (20% each), the project (15%), and the final (25%). The final will not be cumulative.

Preliminary Outline of Topics:
1. Introduction and Simple Regression (Wooldridge, Chapters 1 and 2)
2. Regression (Chapter 3)
3. Inference (Chapter 4)
4. Dummy Variables (Chapter 7)
5. Asymptotics (Chapter 5)
6. Heteroskedasticity and Specification Issues (Chapters 8 and 9)
7. Panel Data (Chapters 13 and 14)
8. Instrumental Variables (Chapter 15)
9. Time Series (Chapters 10, 11 and 12)