Economics 470
(3 credit hours)
Applied Econometric Analysis

Teaching mode: Weekly scheduled synchronous in person class meetings in Wilson 0107 (the biology building – not the library)

Syllabus

David Guilkey
david_guilkey@unc.edu
Gardner 208c
Office hours: 2 PM MW (by zoom: https://unc.zoom.us/j/5532840045)

TA: TBD
Office Hours: TBD

Midterm 1: February 21 (25%)
Midterm 2: April 11 (25%)
Four to Seven Problem Sets (15%)
Daily in class multiple choice quizzes using Canvas (three lowest dropped – 10%)
Final Exam: May 2 at 12PM (25%)

Recommended but not required textbook:
Introduction to Econometrics, 4th Edition, Stock and Watson

Course Computer Software

Stata: May want to buy student edition in addition to or instead of purchasing the textbook. It is also available in Citrix but students sometimes have trouble getting access at busy times.

Prerequisites:
The pre-requisite is Econ 400 (Statistics) with a grade of C or better.

Course description:
Econometrics is the application of statistical methods and economic theory to the problem of identifying, estimating, and testing economic models. This course covers concepts and methods used in empirical economic research. Topics include the classical single-equation regression model, multiple regression models, discrete and categorical dependent variables, instrumental variables and longitudinal data. Students will learn the theory and assumptions behind each of the estimation methods so that they can determine the appropriate method for any particular analysis. In the lectures, there will be many empirical examples using a wide variety of data sets that are either cross sectional or longitudinal.

These data sets are large survey data sets that were gathered from the US and countries all over the world and were typically collected so that a specific program or policy could be evaluated. As part of the lecture, the policy or program that was analyzed is presented along with a discussion of the appropriate econometric method that should be used. After the statistical analysis is performed, students can then determine whether or not the results are supportive of the program's objectives.

Problem sets:
All problem sets (four to seven over the course of the semester) will involve empirical analysis using data sets in STATA format that we will provide. The empirical analysis will require the student to decide on the appropriate econometric method and apply the method to the data. The student will have to write out the justification for the estimation strategy, present the empirical results, and then discuss the implications of their results. The implications will typically involve an explanation of whether or not a particular policy or program had a statistically significant effect on an outcome of interest such as a child's health, an individual's educational attainment, or commercial real estate return differentials across cities, for example.

STATA is available in computer labs on campus, a student edition can be purchased, and it is available as part of the Citrix virtual computer lab that you can access with your onyen and password. Problem sets are independent work – not a group project. However, it is okay to ask a fellow student about STATA commands, for instance. You should upload your assignments to Gradescope by the beginning of class the day they are due (typically a week after distribution). Late problem sets (but before answers are posted) will be marked down by 50%.

Course Outline and Tentative Semester Schedule:

Weeks 1 and 2:

Economic questions and data (Ch. 1)
Review of probability and statistics (Ch. 2 and 3)

Weeks 3 and 4:

Bivariate linear regression (Ch. 4 and 5)

Weeks 5 and 6:

Multiple regression (Ch. 5, 6, and 7)
Functional form and dummy independent variables (Ch. 8)

Week 7:

Review and midterm 1.

Week 8:

Lecture notes for testing and estimation with heteroskedasticity.

Week 9:

Instrumental variables for linear models (Ch. 12)

Weeks 10 and 11:

Repeated cross sections and longitudinal data methods (Ch. 10 plus lecture notes to cover random effects models and specification tests plus repeated cross sections)

Week 12:

Review and midterm 2

Weeks 13 and 14:

Discrete dependent variable models (Ch. 11 plus lecture notes for multinomial logit and conditional logit)

Grading Policy:

All exams are tentatively scheduled to be in person on the days listed above. All problem sets will be open book and open notes and you will typically have one week from the time they are posted until they are due using Gradescope for submission. All problem sets and tests are graded on a 100 point scale. The final grade is determined by weighting problems sets by 15%, daily multiple choice quizzes by 10%, and each exam (two midterms and final) is weighted 25%. Letter grades are determined from the following scale where the grades will be adjusted so that the median score is 88 if the median raw score is less than 88.

100 – 93	A
92-90	A-
89-87	B+
86-83	B
82-80	B-
79-77	C+
76-70	C
69-60	D
59 -0	F

Policy for Missing a Midterm:

If a student misses one of the two midterms, the weight of that midterm in the course grade will be equally divided between the other midterm and the final exam. An exception will be made for University-approved absences (see http://catalog.unc.edu/policies-procedures/attendance-grading-examination/); students with this type of absence may request a make-up examination at a time convenient to both student and instructor.

Code of Conduct:

Students are bound by the Honor Code in taking exams and in written work. The Honor Code of the University is in effect at all times, and the submission of work signifies understanding and acceptance of those requirements. Plagiarism will not be tolerated. Please consult with me if you have any questions about the Honor Code.

Counseling and Psychological Services:

CAPS is strongly committed to addressing the mental health needs of a diverse student body through timely access to consultation and connection to clinically appropriate services, whether for short or long-term needs. Go to their website: https://caps.unc.edu or visit their facilities on the third floor of the Campus Health Services building for a walk-in evaluation to learn more.

Accessibility Resources & Services:

UNC-Chapel Hill facilitates the implementation of reasonable accommodations for students with learning disabilities, physical disabilities, mental health struggles, chronic medical conditions, temporary disability, or pregnancy complications, all of which can impair student success. See the ARS website for contact and registration information: https://ars.unc.edu/about-ars/contact-us.

University Testing Center

The College of Arts and Sciences provides a secure, proctored environment in which exams can be taken. The center works with instructors to proctor exams for their undergraduate students who are not registered with ARS and who do not need testing accommodations as provided by ARS. In other words, the Center provides a proctored testing environment for students who are unable to take an exam at the normally scheduled time (with pre-arrangement by your instructor). For more information, visit http://testingcenter.web.unc.edu/.