Econometrics (26:223:554:01)   **Spring 2013**

Thursdays, 10:00 AM-12:50 P.M., 1 Washington Park 512, Newark Campus

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This is the first of two required econometrics courses for Ph.D. students in Finance and Economics. The purpose of this course is to develop basic econometric estimation and hypothesis testing tools necessary to analyze and interpret the empirical relevance of financial and other economic data. This requires developing statistical methods for estimation of population parameters and testing hypotheses about them using a sample of data drawn from the population distribution, under various assumptions regarding the true population relationship between the observable economic variables. I will focus on the theoretical foundations of econometric analysis and strategies for applying these basic econometric methods in empirical finance and economics research. Topics covered include estimation and hypothesis testing using the classic general linear regression model, combining sample and nonsample information, dummy variables, random coefficients, multicollinearity, and the basics of large sample theory, nonspherical disturbances, panel data, systems of equations, time-series, and their application.

The statistical methods covered in this course are a continuation and generalization of the material covered in *Linear Statistical Models* (26:960:577). The references listed below will serve as your background material for the topics covered. Students are encouraged to seek out whatever reference material facilitates their learning of each topic (this should be a given for you in all of your courses). For example, the topics in Griffiths, Hill, and Judge are also covered in Greene, but Greene presents a more concise and mathematical treatment. The *Handbooks* (chapters can be downloaded from the library) provide more detail and references for further research. Students will find Griffiths, Hill, and Judge very useful in furthering their intuitive understanding of building and interpreting econometric models, and especially helpful for those in need of developing their understanding and use of matrix algebra. Related empirical articles from the economics and finance literature will also be assigned, as well as selected material from

the books listed as references below.

There are a number of very good econometric software packages available. SAS and STATA (Rutgers has site licenses) and NLOGIT/LIMDEP are three such packages that are widely used. R, which is freeware, is increasingly popular. While no specific software package is required, the use of some computational software (or programming if you prefer) will be required to complete the requirements in this course and it is your responsibility to understand the details of the particular software.

Course References[*]

William Griffiths, R. Carter Hill, and George G. Judge, *Learning and Practicing Econometrics*, John Wiley and Sons, Inc., 1993.

William H. Greene, *Econometric Analysis,* 7th Edition, New Jersey: Prentice Hall, 2012.

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

Handbook of Econometrics Volumes I-VI, North-Holland, various years.

Handbook of Applied Econometrics Volumes I and II, Basil-Blackwell, various years.

John Campbell, Andrew Lo, and A. Craig MacKinlay, *The Econometrics of Financial Markets*, Princeton University Press, 1997.

*These books should also be available in the library (some electronically).

Anticipated Schedule:

Date	Topics
Jan. 24	Introduction, Classical General Linear Regression Model
Jan. 31	Classical General Linear Regression Model continued, Inference & Testing Hypotheses
Feb. 7	Combining Sample and Nonsample Information
Feb. 14	Dummy Variables and Varying Coefficients
Feb. 21	Specification, Multicollinearity
Feb. 28	Large Sample Theory
March 7	Large Sample Theory continued

March 14   Nonspherical Disturbances

March 28   Nonspherical Disturbances continued

April 4   Introduction to Panel Data Models

April 11   Introduction to Systems of Equations

April 18   Introduction to Time Series

April 25   Applications

May 2   Applications and Course Review

May 9   Final Exam

Other topics may be added as time permits.

Evaluation of performance: Students are responsible for all problems and problem sets assigned in class, which will be randomly collected. Quizzes, graded problems, and class participation will be 50% of your course grade and the final exam is the other 50%.

Potentially useful web resources:

http://www.stata.com/links/resources-for-learning-stata/