Econometrics I  
Tepper School of Business  

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Class Meetings:  Section A1  
Tuesday & Thursday  
1:30pm - 3:20pm  
rm 147  
mini 1: August 25 to October 8  

COURSE DESCRIPTION  

This course is an introduction to the basic questions, tools and techniques used in empirical social science research. Students will learn to calculate and perform correct inference on parameter estimates.  
The course focuses on the multivariate linear model. Topics include: consistency and asymptotic normality of the parameter estimates, sampling distributions, hypothesis testing parameter restrictions and specification tests. Students will learn the impact of departures from traditional assumptions in the linear model (e.g. correlated errors, heteroscedastic errors, correlation between the regressors and the errors) and how to address these situations. Students are expected to be familiar with multivariate calculus, linear algebra, and basic probability and statistics.  
Students will write MATLAB programs on problem sets.  

GRADING  

The students will be graded on three problem sets, some in-class quizzes and a final exam.  
The course grade will be determine by: 50% problem sets and quizzes and 50% a final exam.
TEXTBOOKS

Some useful econometric books are


I will cite sections of the Davidson and MacKinnon book to complement the lectures.
THE GENERAL OUTLINE

  D&M Chapters 1, 2, 3, 4 and 5.

• Week 3. Problems with regression. Introduction to the LLN and the CLT. Introduction to asymptotic theory. The delta method.
  D&M Sections: 4.5 and 5.6.

• Week 4 and 5. Linear regression when the errors are not iid. Generalized least squares. Heteroscedasticity and autocorrelation. Durbin-Watson test statistic. White standard errors.
  D&M Chapter 7.

• Week 6. Linear regression when the errors and the regressors are correlated. Instrumental variables (IV).
  D&M Chapter 8.

• Week 7. Introduction to maximum likelihood. Discrete dependent variables.
  D&M Chapters 10 and 11.