

**University of Colorado at Boulder
Department of Economics**

Introduction to Econometrics

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Office Hours:
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M: 2-3:30pm
Th: 4-5:30pm

**Economics 4818
Syllabus
Spring 2007**

Course Description

Introduction to Econometrics introduces students to econometric analysis. It aims to have students reach the level of multiple least squares regression analysis by the conclusion of the course. (See the outline below for topics covered.) The course has both theoretical and practical elements. Students will be expected to master econometric theory and material taught in the computer lab.

The prerequisite for this course is Economics 3818, Introduction to Statistics.

Text

The textbook for the course is *Undergraduate Econometrics, 2nd edition*, by R. Carter Hill, Griffiths, W., and Judge, G. (2001) Wiley, New York.

Please note: This textbook is quite expensive (\$118). However, this edition has been in print for 6 years, so there are many second hand copies around for a lot less! I looked on Amazon, and saw that it was possible to get a second hand copy for about \$50, which seems reasonable.

Supplementary Text:

Reiman, M. and R. Carter Hill (2001) *Using EViews for "Undergraduate Econometrics, 2nd Edition"*, Wiley, New York

Please note: This is not required, but could be useful. It contains a student version on EViews, so you can load the computer program on your personal computer and do the computing part of the problem sets at home. If you are struggling with the computing part of the course, I would recommend this book. Again, it can be purchased second hand as it has been in print for a number of years.

Computer Program

The computer program for the course is EViews.

Class Schedule

The class meets Tuesday, Thursday 2:00 - 3:15pm, HLMS 241

Assessment

The assessment for this course is divided between problem sets, a midsemester exam and the final exam.

Problem Sets

There will be 10 problem sets due throughout the semester. Problem sets are issued in Tuesday lecture. They are due the following Tuesday, in lecture. The answers will be discussed in class the Thursday lecture, after they are due.

Problem sets will be based on the work we are covering in lectures. They may require you to use EViews, the computer program we are using this semester.

1. For handing in an attempted problem set, you will get 1 point per problem set. This rewards "having a go". The problem set must be attempted. There will be no point awarded for a blank piece of paper, or a piece of paper with the questions written on it,

Topic Outline

Topic 1: Introduction and Review

Principles of econometric modeling
Probability and random variables
Discrete and continuous random variables

Reading: Hill et al (2001) Chapter 1, Chapter 2, sections 2.1, 2.2, 2.6

Topic 2: Describing Probability Distributions

Expectations (means and variances)
Joint random variables
Covariance, correlation

Reading: Hill et al (2001) Chapter 2, sections 2.3, 2.4, 2.5

Topic 3: Random Sampling

Random samples; distribution of mean and variance
Sampling from normal populations
Central Limit Theorem

Topic 4: Simple Linear Regression

Population regression model
Sample regression function
Interpretation of parameters and estimates
Properties of least squares estimators
Gauss Markov Theorem

Reading: Hill et al (2001) Chapters 3, 4

Topic 5: Inference in Simple Regression

Chi-square and t-distributions
Confidence Intervals
Hypothesis testing
Prediction

Reading: Hill et al (2001) Chapter 5

Topic 6: Regression Model Applications

Goodness of fit;
Functional forms
Applications

Reading: Hill et al (2001) Chapter 6

Topic 7: Multiple Regression Model
Population regression model
Sample regression function
Interpretation of parameters and estimates
Tests of parameters individually
F-distribution
Tests of parameters jointly
Omitted and Irrelevant variables
Multicollinearity

Reading: Hill et al (2001) Chapter 7, 8

Topic 8: Dummy Variables
Modelling with dummy variables
Interactions
Seasonality

Reading: Hill et al (2001) Chapter 9

Topic 9: Heteroskedasticity
The heteroskedasticity problem
Detection tests
Remedies

Reading: Hill et al (2001) Chapter 11

Topic 10: Autocorrelation
The autocorrelation problem
Detection tests
Remedies

Reading: Hill et al (2001) Chapter 12