

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

**Introduction to Econometrics**

**Prof. J.T. Toman**  
toman@colorado.edu  
303 492 3248  
**Office Hours:**  
1332 Grandview Ave  
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