ECON 322: Introduction to Econometrics

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Rutgers University
Department of Economics

Instructor

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Class Meetings

Lecture: Mondays, Thursdays 9:50am-11:10am, Academic Building (AB) 4400

Office Hour

Mondays 3:00 PM - 4:00 PM or by appointment.
Course website on Adobe Connect: https://meetings.rutgers.edu/econ322

Prerequisite

It is expected that all students will have taken an introductory statistics class (e.g. 960:211 or 960:285), Calculus I (640:135 or 640:151), and principles of economics courses covering both microeconomics and macroeconomics (e.g. 220:102 and 220:103 or 220:200). Especially, students without a good command of the materials on introductory statistics will meet a lot of challenges in assignments and exams.

Course Overview

Econometrics is a set of statistical tools used to analyze economic relationships using economic data. The methods taught in this introductory course can also be employed in the business disciplines of accounting, finance, marketing and management and in many social science disciplines. (statistics for social sciences is very different from statistics for sciences.) This course helps gain an overview of what econometrics is about.

The emphasis of this course will be on understanding the tools of econometrics and applying them in practice. In particular students will be able to estimate and interpret linear regression models. Students should be able to use a statistical/econometric computer package to estimate an econometric model and be able to report the results of their work.

Textbook

James H. Stock and Mark W. Watson, *Introduction to Econometrics*, 3rd Edition, Pearson.

MyEconLab

The class will be using MyEconLab for homework assignments and exams. The bundle of the text book and the access to MyEconLab can be purchased online or from the bookstore (around $65.)

Computings

Examples in class will be coded in <u>Matlab</u>. Matlab is free to access on the Rutgers University Software Portal. Students can also choose their own packages to work on the assignments.

Lecture outline

1. Introduction

   Brief introduction to course; Sources of data.

2. Review of Statistical Concepts

   Discrete and continuous random variables

   Expected value

   The joint, marginal density, conditional density and independence

   Covariance and correlation

   The Normal density

   Hypothesis tests, confidence intervals

3. The Simple Linear Regression Model

   The econometric model

   Estimating the model and interpreting the results

   Inference and prediction in the Simple Linear Regression Model

   Midterm

4. Assessing Regression Models

   Omitted variable bias

   Errors in variables bias

   Sample selection bias

   Simultaneous causality bias

5. The General Linear Regression Model

   Estimating and interpreting the results

   Inference and prediction

   Interactions among dependent variables

6. Additional Topics in Regression

   Regression Models with Binary Dependent Variable

   Instrumental Variable estimation

   Panel data and time series models

   Final

Assessment

The grading is based on three parts:

Table 1: Grading components

Items	%
weekly assignment	30%
midterm exam	30%
final exam	40%

Table 2: Grading scale

Items	%
$\geq 90\%$	A
$[80, 90)\%$	B+ or A-
$[70, 80)\%$	C+ B- or B
$[60, 70)\%$	C-
$< 60\%$	D+ or lower

- **Weekly assignment** is due in a week. Computer assignments will consist of applied econometric work using a computer program.

- There will be **one midterm**. Midterm and final exams will be in class, closed book. Dates will be announced at least two weeks before the exam.

- **The final exam** will be given in the regularly scheduled time period during the final exam period.

- **Make-up exams** will be given only in the event of legitimate excuses for missing an exam. "Legitimate excuses" here mean university recognized absences, and often only refer to medical emergency and religious events. You should discuss with me about your legitimate excuses (except for medical emergency) **at least one week ahead of time**.

  Other excuses such as "attending best friends' weddings" are not acceptable.

Academic Integrity

The university expects all students to adhere to the University Honor Pledge: *I pledge on my honor that I have not given or received any unauthorized assistance on this assignement/examination.*

Final comments

The best way to learn is by doing. I recommend attempting as many exercises at the end of each chapter of the text as you can.