

## Course Outline for *Econometrics*

Department of Economics  
Rutgers University  
Fall Semester, 2008

### Course Information

Title: Econometrics

Code: 01:220:322:6

Lecture Times: MTH 12.00–1.20pmam (Period 3 Busch/Livingston Campuses)

Location: Livingston Classroom Building (LCB) Room 102

Course site: <http://sakai.rutgers.edu>

Note: Students enrolled in this site can log onto SAKAI using their EDEN username and get access to this class' site.

### Contact Information

Instructor: Prof. John Landon-Lane

Room: New Jersey Hall, Room 424 (CAC)

E-Mail: [lane@econ.rutgers.edu](mailto:lane@econ.rutgers.edu)

Office Hours: Tuesday and Friday 11am-12noon.

### Course Objective

Econometrics is a set of research tools used to estimate and test economic relationships. 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. The aim of this course is to provide you with the skills helpful in filling the gap between being “a student of economics” and being “a practicing economist.” By taking this introduction to econometrics you will gain an overview of what econometrics is about, and develop some “intuition” about how things work. The emphasis of this course will be on understanding the tools of econometrics and applying them in practice.

### Prerequisites

It is expected that all students will have taken principles of economics courses covering both microeconomics and macroeconomics (e.g. 220:102 and 220:103 or 220:200) and an introductory statistics class (e.g. 960:211 or 960:285). It will be assumed that all students have a good command of the material taught in these courses. It is strongly suggested that you review this material at the beginning of this course.

## Text and Software

The text for this course is:

James H. Stock and Mark W. Watson, *Introduction to Econometrics 2nd Edition*, Addison-Wesley 2007, ISBN 0-321-27887-9

This is an excellent textbook and should be available in the bookstores. The software that will be used in this course is EViews. The software is available at the Economics Department MicroCenter, which is located in Room 209 of New Jersey Hall, CAC. No prior knowledge of this software package is assumed. This package will be introduced in lectures and in the problem sets as the course proceeds.

The text has an excellent additional resource website. The address is

[http://wps.aw.com/aw\\_stock\\_ie\\_2/](http://wps.aw.com/aw_stock_ie_2/)

At this website you will find answers to selected exercises that appear at the end of each Chapter of the book. You will also find a tutorial on how to use EViews at this site.

## Lecture Outline

The following is a tentative list of lecture topics. I have indicated the relevant Chapters of the text for each topic. This should be used as a rough guide for your reading. I will give much more detailed reading information during the lectures. The lecture material will be greatly enhanced for you if you are up to date with your readings.

### 1. Introduction (Chapter 1)

- Brief introduction to course
- Why study econometrics?
- What is an econometric model?
- Sources of data.

### 2. Review of Statistical Concepts (Chapter 2 and Chapter 3)

- Random Variables
- Controlled vs. uncontrolled experimental data
- Discrete vs. continuous random variables
- Review of probability concepts
- Expected value
- Sample moments of a random variable
- The joint density function
- Marginal density, conditional density and independence
- Covariance and correlation
- The Normal density

**Exam 1 will cover material up until this point.**

3. The Simple Linear Regression Model (Chapters 4, 5, and 17)
  - The econometric model
  - The least squares principle
  - Estimating the econometric model and interpreting the results
  - The properties of the least squares estimates of an econometric model
  - Inference and prediction in the Simple Linear Regression Model
  - Interval estimation and hypothesis testing
  - Evaluating the Simple Linear Regression Model

**Exam 2 will cover material up until this point.**

4. The General Linear Regression Model (Chapters 6, 7, 8, and 18)
  - The econometric model with more than one independent variable
  - The least squares principle
  - Estimating the GLRM and interpreting the results
  - Inference and prediction in the GLRM
  - Single and joint hypothesis tests of the parameters of the econometric model
  - Model specification issues
  - Collinear variables
  - The use of non-sample information in the GLRM

**Exam 3 will cover material up until this point.**

5. Non-linear effects in Regression models (Chapter 9 and Chapter 11)
  - Binary variables
  - Interactions between binary variables
  - Functional form
  - Binary Dependent Variables

**Exam 4 will cover material up until this point.**

6. Panel Data and Instrumental Variable Methods (Chapters 10 and 12)
  - Estimating regression models with panel data
  - Instrumental Variable estimation
7. Topics in Time Series Econometrics (Chapter 16) (if possible)
  - Stationary time series
  - Spurious regression
  - Tests for stationarity
  - Cointegration

**Exam 5 will cover material up until this point.**

NOTE: I reserve the right to add or subtract topics as the course develops. Not all topics will be covered in the same detail. Time constraints may cause some topics to be omitted. Unless otherwise notified, students are responsible for all the topics noted in

the lecture outline.

## Course Assessment

Final grades will be based on your performance in four examinations and some computer assignments set during the course according to the following distribution:

Exam 1	10%
Exam 2	20%
Exam 3	20%
Exam 4	20%
Exam 5	10%
Computer Assignments	20%

Computer assignments sets will consist of applied econometric work using a computer program. I encourage students to work together on the homework assignments. However, all students must write up their answers independently of each other. Students caught submitting identical, or nearly identical, assignments will receive a zero grade for that assignment. Late assignments will receive a score of zero. There will be plenty of time allocated for the assignments so that there is no excuse for a late assignment.

ALL exams are cumulative. If you do not attend an exam, you will receive a zero grade for that exam. Students who cannot attend an exam can, under certain circumstances, make alternative arrangements if they provide me with a note from the Dean's office. I do not give extra-credit assignments.

Finally, I regard academic dishonesty as a very serious offence. Any student caught cheating will receive an F for this course and will be reported to the appropriate officer of the student's college. There will be no warnings. The following are some of the actions which I regard as academic misconduct:

1. Taking unauthorized materials into an examination.
2. Submitting work for assessment knowing it to be the work of another person.
3. Improperly obtaining prior knowledge of an examination paper and using that knowledge in the examination.
4. Failing to acknowledge the source of material in an assignment.

## Grade Policy

The following table indicates what scores are necessary for each particular grade:

<u>Grade</u>	<u>Range of Scores</u>
A	> 80
B+	72 – 80
B	65 – 72
C+	60 – 65
C	55 – 60
D	50 – 55
F	< 50

## Important Dates

<u>Date</u>	<u>Event</u>
Sept 25, 2008	Exam 1
Oct 16, 2008	Exam 2
Nov 6, 2008	Exam 3
Nov 20, 2008	Exam 4
Dec 8, 2008	Exam 5

## Final Comments

1. It is expected that all students will attend lectures, be up to date with their readings and be prepared to participate fully in class. Please ask questions in class or in office hours if you have any problems or misunderstandings. Do not wait until just before an exam to ask questions.

2. 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. I will also post practice problems that I will discuss in class. Students should attempt to do all practice problems.

3. I will post incomplete lecture notes on the course site prior to each lecture. These lecture notes are merely outlines and do not constitute the whole of the lectured material for this course. Students should attend lectures to add in the details that are missing from the lecture outlines.