

Course Outline for *Econometrics (01:220:322:02)*

Department of Economics
Rutgers University
Fall Semester, 2017

Course Information

Title: Econometrics
Code: 01:220:322:02
Lecture Times: MTh 11:30am–12:50pm
Location: Murray Hall Room 212 - College Avenue Campus
Course site: <http://sakai.rutgers.edu>
Final Exam: There is no final exam.

Contact Information

Instructor: Prof John Landon-Lane
Campus Address: 419 New Jersey Hall, CAC
Email: lane@econ.rutgers.edu
Office Hours: TW 11am-12noon
Telephone: +1-848-932-8657

Course Objective and Learning Goals

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.

Students who successfully complete Econ 322 should be comfortable with basic statistics and probability. They 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 in a non-technical and literate manner. In particular a student who successfully completes Econ 322 will be able to estimate and interpret linear regression models and be

able to distinguish between economic and statistical importance. They should be able to critique reported regression results in applied academic papers and interpret the results for someone who is not trained as an economist.

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), Calculus I (640:135 or 640:151) 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.

Important Information

Students majoring in Economics need to pass this course with a C or higher.

Text and Software

The text for this course is:

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

The class will also be using *MyEconLab* and the bundle of the text book and the access to *MyEconLab* can be purchased online or from the bookstore. You have a number of options:

- MyEconLab access card (all digital) (ISBN 0133487679 or 9780133487671)
- MyEconLab + Looseleaf Package (ISBN 0133848914 or 9780133848915)
- MyEconLab + Bound Text Package (ISBN 0133595420 or 9780133595420)
- if you already have a copy of the text you can purchase a access code from the bookstore or from Pearson directly.

The software that will be used in this course is EViews. 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 software is available in all university computer labs. Students can also purchase a full student version of this software from the following website:

<http://www.ihsmarketplace.com/collections/student-version>

There is also a free student “lite” version available at the website as well.

Lecture Outline

The following is a 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. 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
- Review of Statistics

- Hypothesis tests
- p-values

Exam 1: September 28, 2017

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
4. The General Linear Regression Model (Chapters 6, 7, 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

Exam 2: October 19, 2017

5. Non-linear effects in Regression models (Chapter 8)
 - Binary variables
 - Interactions between binary variables
 - Functional form
6. Assessing Regression Models (Chapter 9)
 - threats to validity of model
 - internal threats
 - external threats

Exam 3: November 2, 2017

7. Additional Topics in Regression Analysis

- Estimating regression models with panel data (Chapter 10)
- Regression Models with Binary Dependent Variable (Chapter 11)
- Instrumental Variable estimation (Chapter 12)

Exam 4: November 27, 2017

8. Topics in Time Series Econometrics (Chapters 14-16)

- Stationary time series
- Trends
- Spurious regression
- Tests for stationarity

Exam 5: December 11, 2017

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

Course assessment will take many forms. There will be graded assignments (via *MyEconLab*), empirical projects, and exams.

Final grades will be based on your performance in all forms of assessment according to the following distribution:

Assessment	Weight
<i>MyEconLab</i> assignments and empirical projects	20%
Exam 1	10%
Exam 2	15%
Exam 3	15%
Exam 4	15%
Exam 5	10%
Final Project	15%

Computer assignments sets will consist of applied econometric work using a computer program. I encourage students to work together on the empirical 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 documentary evidence regarding the reason they missed the exam. I do not give extra-credit assignments.

There will not be a final exam in this course! However there will be a final project that will be assigned at the end of the course and will be due during the period your final exam was scheduled. This final project must be completed on your own with no help from fellow classmates.

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 university authority. 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.

Grading Policy

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

Grade	Range of Scores
A	> 85
B+	75 – 85
B	68 – 75
C+	60 – 67
C	55 – 60
D	50 – 55
F	< 50

Important Dates

Date	Event
Thursday, September 28, 2017	Exam 1 (regular class time, full class)
Thursday, October 19, 2017	Exam 2 (regular class time, full class)
Thursday, November 2, 2017	Exam 3 (regular class time, full class)
Monday, November 27, 2017	Exam 4 (regular class time, full class)
Monday, December 11, 2017	Exam 5 (regular class time, 30 mins)
Monday, December 21, 2017	Final Project Due 3pm.
Tuesday, September 12, 2017	Last day to drop class without receiving a W.
Monday, October 30, 2017	Last day to drop class with a W grade.
Tuesday, November 23, 2017	Change in designation of days. Thursday classes meet today.

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. Students are expected to attend all classes. If you expect to miss one or two classes because of illness or a family emergency, please use the University absence reporting website <https://sims.rutgers.edu/ssra/> to indicate the date and reason for your absence. An email is automatically sent to me.
3. 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.
4. 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.
5. No electronic devices (e.g. laptops, iPads, or cell phones) are allowed to be used in class. Please be respectful of your fellow classmates and instructor and turn all devices off during class.